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VOL. LI NOVEMBER
No. 11 1936

The American City

Issued Monthly by the
American City Magazine Corporation
470 Fourth Ave., New York
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•

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Daily News Building, Chicago
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Mills Building, San Francisco
DUNCAN A. SCOTT, Representative

•

Subscription, $2 per annum in United States and Canada ($3 to foreign countries)
Single copies, 35c
Back numbers available

Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

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In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

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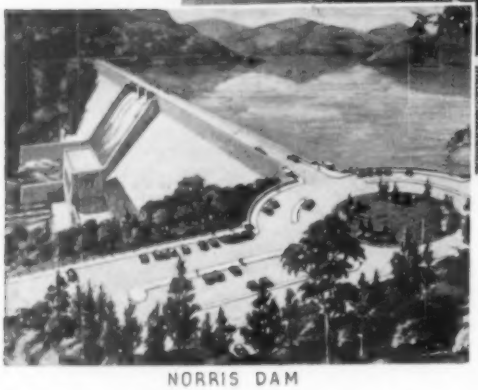
IN KNOXVILLE TENNESSEE

KNOXVILLE, TENNESSEE SKYLINE



NORRIS DAM

Located in the heart of the rich East Tennessee Valley, Knoxville stands as an important commercial and industrial center of a prosperous section that contains the greatest variety of natural resources in the world. It is the western and northern gateway to the Great Smoky Mountain National Park and just twenty-five miles from Norris Dam. This dam is a part of the construction by the Tennessee Valley Authority for the development of the Valley of the Tennessee River.

The industries of Knoxville are diversified, the major groups being textiles and clothing, food and mill products, marble, lumber, wood and metal working. In addition to its industrial supremacy, Knoxville is an attractive, healthful city, with the best in cultural and educational advantages and a friendly, hospitable population.

WILLIAMS CREEK WATER PLANT

The water supply for the City of Knoxville is obtained from the Tennessee River, on which it is located. Its water plant is one of the finest and best equipped in the country, having been erected in 1927 at a cost of $2,500,000.00. It delivers over three billion gallons of water yearly to the customers of the department. There are 26,075 water services, each of which pays an equitable charge for the amount consumed through the 100% metered distribution system. Pittsburgh Meters used in this system are helping to protect the investment Knoxville has made in its modern and efficient water department.

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PITTSBURGH WATER METERS

Planning - Housing - Taxation

Cities Bring Planning Problems to Conference

SAN DIEGO wants to know what cities can do to regulate subdivisions, to insure that all residential lots are serviced by sewerage and water connections and other public service facilities before plots can be recorded and lots sold. Des Moines would like to ascertain an effective method of regulating tourist-cabin location on new highways within the city limits. South Dakota cities are concerned because indigent "off-the-farm" families have settled in poor shacks just within or beyond the boundary and want municipal services for which they cannot afford to pay and which the cities are financially unable to give them. Can anything be done about it? they ask.

These planning problems and many others will be discussed at a conference called by the American Society of Planning Officials on the proper administration of a city planning agency and on relationships between city planning and county, regional and state planning. The meeting will be held in Chicago, November 19 and 20.

Problems for discussion include: the proper composition of planning boards; the role of the city engineer in city planning activities; how far planning commissions should go in the preparation of detailed plans; relationships with the county and state planning boards; and the planning board's relation to the mayor, the city council, the department of public works, the local chamber of commerce and other civic associations.

The President Pledges Further Aid to Housing

IN an address delivered on the Lower East Side of New York on October 28, President Roosevelt, said:

"We have, for too long, neglected the housing problem for all our lower-income groups. We have spent large sums of money on parks, on highways, on bridges, on museums, and for other projects of civic betterment. For the most part, that was money well spent. But we have not yet begun adequately to spend money in order to help the families in the overcrowded sections of our cities to live as American citizens have a right to live.

"You and I will not be content until city, state and Federal governments join with private capital in helping every American family to live that way.

"We need action and more action to get better city housing. Senator Wagner and I had hoped for a new law at the last session of the Congress. We who believe in better housing have not been defeated. I am confident that the next Congress will start us on our way with a sound housing policy."

Overall Tax Limitation Condemned by A. M. A.

DEFINITE condemnation of the principle, purposes and results of overall tax limitations was expressed by the American Municipal Association in a resolution passed at its annual conference in Chicago last month.

Indicating disbelief that it is possible for local governments to continue exercising control over their personal policies, services and expenditures when taxes are inflexibly limited by law, the resolution condemned the "chief proponents" of tax limitations as not "genuinely concerned with tax reduction." "Their admitted purpose," read the resolution, "is to reduce governmental revenues below minimum requirements in order to force a shifting of the tax load, which in general has resulted in new consumer taxes."

Eight states have overall tax limitation laws at present. Washington, one of the eight, votes November 3 on whether to continue the measure. Georgia's Legislature has proposed a constitutional amendment providing for tax limitation, which now awaits the approval or disapproval of the state's voters. Citizens in Massachusetts, Oregon, Colorado and Nevada will also find tax limitation questions on their ballots, while Michigan votes on total abolition of all property taxes.

City Managers' Convention Notes

AT THE Twenty-third Annual Convention of the International City Managers' Association, held in Richmond, Va., October 19-21, 1936, the following officers were elected: President, Irving C. Brower, New Rochelle, N. Y.; First Vice-President, F. L. Cloud, Kingsport, Tenn.; Second Vice-President, E. L. Mosley, Colorado Springs, Colo.; and Third Vice-President, J. Bryan Miller, Wichita Falls, Texas.

Uses for Tax-Delinquent Real Estate

The city managers seemed to be fully aware of the advantages of increased ownership of real estate by the municipality. Property to which some of the cities had acquired title is being used for parks, recreation areas, fire and police stations, and other city institutions such as schools and health buildings. However, the process of getting a clear title in tax-foreclosure proceedings is usually such a long and expensive matter that no city manager has undertaken it as a definite project. In some states from five to ten years is required to comply with all the laws revelant to clearing claims against the title.

Municipal Services for Outlying Areas

The discussion at Richmond brought out the idea that outlying areas should be forced to pay a materially higher charge for services rendered by the municipality—such as fire, police, sewer, water, gas, electric, etc. This practice would reduce the tendency to locate outside the city limits merely to escape higher taxes. The city managers in increasing numbers are realizing that in many ways the municipality itself has subsidized the exodus beyond the city limits by furnishing necessary services at nearly the same price as paid by supporters of the city tax roll.

Parking Meters

A small town was troubled by excessive congestion surrounding the county court-house. The installation of about 100 parking meters solved the problem. One day everyone in the vicinity of the court-house was questioned, and it was found that not one had unfavorable comment for the new meters.

Dallas, Texas, reported that not a dozen complaints had been received since parking meters were installed.

Admonitions:

1. Deposit all revenues in the traffic control fund.

2. The first installation should be made as an experiment on a limited scale. Subsequent installations should follow when petitioned for by a large majority of the abutting property owners.

3. First offenders of regulations covering the use of the meters should be liberally treated, so as not to erect a psychological barrier to their success.

4. If trucks are allowed the use of these spaces free of charge from 7 to 10 A.M., it will help to solve the problem of double parking.

5. Until an appellate court hands down a favorable decision on their use, all contracts should specify that a suitable portion of all money expended by the city for the installation of parking meters shall be refunded by the manufacturer in case their use is found to be in conflict with existing laws.

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LAYNE PUMPS
LAYNE WELL WATER SYSTEMS

Our Municipal Notebook

A New City Service?

THIS magazine is receiving from the assessing and tax-collecting offices of a number of cities reports on their degree of mechanization and the advantages derived from modern systems of machine recording and billing. Obvious advantages are accuracy, neatness, legibility, speed, permanency of records, uniformity, "all of which," says City Assessor John Kesselring of Louisville, "leads to a more efficient and economical government.

While these gains are of undoubted public value, they are also of distinct advantage to the departments providing these records. There are still other advantages of a broader and deeper and perhaps more dramatic nature. Assessor John S. Clark of Cook County, Ill., lists one of these which he terms "proper development for analysis and reporting of assessment statistics, study of trends, and legislative improvements."

The statistical phase of this work, made possible by the speed and accuracy of business machines, offers great possibilities for the city government to render service to all city business and civic interests. New York City's Department of Taxes and Assessments understands these possibilities and, in its endeavor to obtain a modern system, this phase of modern assessing has been presented to a number of these interests in a successful effort to gain their support.

Certain of these statistics are obvious, such as rentals, operating costs, sales, mortgage rates, vacancy trends. They foreshadow other information that might be made available. For example, show by districts whether or not new buildings are being assessed at more or less than their cost. Show in each district whether or not the cost of city improvements is recovered in assessed valuations. Show the total cost to real estate of the various city services—fire, police, sanitation, etc. —compared with the value of real estate, and the trend.

This character of information should be of close practical value to real estate firms, banks, and chambers of commerce, to mention only three. Why should not the city furnish it as a public service? This is an issue of such importance that, properly presented, it might swing an election.

Power Accounting That Counts

MUNICIPAL electric departments have probably never been overburdened with elaborate cost data that reveal at all times the exact value and position of the department. The tendency, however, is toward much more complete accounting practice. The same is true in the private utility field, and a thought from C. E. Kohlhepp, of Wisconsin Public Service Corporation, is worth general consideration. His idea is that the cost of performing any function, whether accounting or shoemaking, should not be permitted to exceed useful value. "The trouble with accounting elaborations is that we are prone to think we can handle them with little or no additional cost, just because we have an efficient, well-oiled accounting machine that can easily take a little heavier load. . . . Detailed records covering investment in land, structures, and equipment, are valuable and should be maintained." But what possible benefit, he asks, can result from keeping a detailed record of each of, say, 10,000 poles?

The highly important objective of municipal-electric accounting is to show the absolute investment value and condition of the property, the total debt against it, the total annual revenue, and the all-inclusive total of annual costs to run it. The surplus or deficit should be comparable with that figure for every plant and distribution system throughout the country.

City Transportation

CITY governments have always been intensely interested in their systems of transportation. In the past, this interest has frequently had to be one of watchfulness and criticism. Times have changed in the transportation industry, as elsewhere, and the present concern seems to turn on efforts to obtain a modern character of service that tends to reduce congestion, competes favorably with traffic tempo, and meets the needs of local travel. The attainment of these objectives requires the companies to attract a larger volume of passengers to modern vehicles operated on efficient schedules. Thus the intent of the cities clicks with the financial needs of the companies, and there is much activity in both the electric and automotive departments of the field.

Shreveport, La., is strong for trolley coaches, and to the twenty 30-passenger coaches already operated in this city of 77,000 population, nine 40-passenger coaches have been added to the five trackless-trolley lines. At Miami, the City Council has authorized Thomas E. Grady, of the Rate and Traffic Division, to prepare specifications for bids for a uniform bus and transportation system.

These improvements mean increased revenues for cities. The Indianapolis company, for example, pays the city $357.23 per mile for the 48 miles of streets on which trolley coaches are operated. This amounts to $17,150. Several recent franchises approved by the New York City Board of Estimate require the company to pay 5 per cent of gross receipts from any source in connection with the operation of omnibuses. Buses operating in New York City during the fiscal year ending June 30, 1936, grossed $25,000,000, and since then additional bus routes have been added. Norfolk's City Manager reported gross bus receipts of $60,561 for September, of which 5 per cent, or $3,028, had been credited to current city revenue.

These city revenues, which are in addition to regular taxes, help the city treasury; but the steady improvement of local transportation service is a boon to all citizens. Possibly most promising of all is the increased recognition by all local bodies, that a good transportation system means safe, comfortable, well-engineered vehicles efficiently operated—or first-class public service. It's a buyers' market.

Turn on Red?

THERE has been controversy at Ocala, Fla., over what to do when the newly installed traffic lights show red. The practice has been to turn both right and left on red, but some citizens contend that pedestrians would be safer if there were no such turns. Horace L. Smith, Secretary of the Marion County Chamber of Commerce, Ocala, invites discussion from towns of about 8,500 population. The Institute of Traffic Engineers proscribes all turns on red unless an illuminated green arrow is provided, and then there should be a special lane marked out for cars privileged to turn right on the arrow.

Recording Conversations

THE normal use of dictating machines by city officials was told in the March issue of this magazine. During the last year or so there has been developed a more comprehensive form of mechanical dictation or voice writing by which meetings can be accurately reported. This was the method employed at the Third World Power Conference, where some 400,000 words in six languages were recorded on 300 permanent records. This method can be used at any meeting where an absolute verbatim record is desired, and it also has obvious uses in preserving conversations of interest to the police.

And now—

Another 1,000,000 gal. tank for the Newport News Waterworks Commission

Above—New 1,000,000-gal. radial cone bottom tank located at Phoebus, Va. Note that it is an exact replica of the tank at the left which was erected nearby at Newport News, Va., a short time ago.

Step-by-Step Modernization:

YOU might well say that the Newport News, Virginia, Waterworks Commission has standardized on million-gallon elevated tanks. Their second tank, which has just been erected in the Phoebus district, exactly duplicates the first tank erected a year or so ago in the Newport News city district. Each tank is 84 ft. in diameter, stands 125 ft. to bottom, and has a depth of 25 ft.

This waterworks system serves a population of about 70,000 located in several communities on the tip of the peninsula formed between Chesapeake Bay and the James River. Aside from attesting to the satisfactory performance of the first tank, one of the most significant points about the second installation is the ease with which it fitted into the Commission's *Modernization Program.* Instead of requiring completion of the entire program all at one time, it was possible to take it up *Step-by-Step* as and when convenient.

This is just one example of how large capacity elevated storage tanks invariably fit in well with modernization programs. Let us give you the facts about the improvements in service and reductions in pumping costs that can be secured with properly designed elevated storage. Write our nearest office.

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Houston.....2919 Main Street
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Los Angeles.....1403 Wm. Fox Bldg.

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Winter Water-Works Maintenance

Thawing Equipment Used in Chicago

IN its work of thawing water services, mains, hydrants and meters last winter, the Water Pipe Extension Division of the Bureau of Engineering in Chicago used the following equipment:

1. A portable gasoline-furnace fired boiler generating steam. There are 42 of these outfits generating steam at approximately 10 pounds pressure, each outfit attended by one plumber, one laborer, and one truck. They were used on services and meters.

2. Portable steam boiler on skids.—Two of these outfits, generating steam at approximately 10 pounds pressure, each outfit attended by one hoisting engineer, one plumber and two laborers, were used in thawing mains where a large quantity of steam was required for an extended period.

3. Portable steam boiler on truck.—Four of these outfits were used in thawing mains and hydrants where a large quantity of steam was required. The steam pressure is approximately 20 pounds. Each outfit was attended by one hoisting engineer, one plumber, three laborers and a driver.

4. City steam roller.—Two of these outfits were used where large quantities of steam were required at approximately 20 pounds pressure. Each outfit was attended by one hoisting engineer, one calker and two laborers.

5. Gasoline motor-driven electrical generators on light trucks.—The city used 21 of these outfits, generating direct current at 30 volts and 300 amperes. Each outfit was attended by one inspector, one plumber, two laborers and one truck with welder.

6. Commonwealth Edison Co. transformer and equipment trucks.—The city used 10 of these outfits. Connection was made to the company's high-voltage lines, alternating current with the current stepped down to either 110 or 55 volts. They delivered from 300 to 500 amperes. Each outfit was attended by one inspector, and one plumber from the city's forces, and one foreman, and two drivers and four line men from the Commonwealth Edison forces. This outfit required two trucks.

The costs of thawing services have been studied for the period from January 23, 1936, to February 25, 1936, inclusive. The figures are approximate only, but they will give some idea of the cost of the extremely cold weather in dollars and cents to the city of Chicago. There were 5,400 services thawed out at a total cost of $101,000, or an average of $18 each. This cost included all rented equipment, labor, material, and overhead.

There were 2,300 frozen meters removed and spreads installed, at a total cost of approximately $7,100, or $3 each. It cost $6,000 for thawing out frozen mains.

Over 4,800 frozen fire hydrants were put in operating condition at a total cost of over $14,000.

The following figures show the cost of thawing services with different types of equipment. These figures are approximate only and give the cost of operation of the equipment only:

Average cost per service by Commonwealth Edison Co.	$19.43
Welding outfit	12.55
Steam outfit	7.20

—From a paper by LORAN D. GAYTON, Acting City Engineer, Chicago, Ill., presented before the Illinois Section, American Water Works Association.

Winter Troubles with Meters

WILMINGTON, DEL., has approximately 27,000 water meters, including about 3,000 curb settings. It is the rule to place responsibility on the property owner for the loss of a meter located in the cellar and damaged by freezing. The city assumes responsibility for the curb setting. Strict enforcement of collecting for the loss of meters in the cellar setting due to negligence on the part of owners materially reduced the number failing in that location last year. It was particularly noticed during the winter of 1935-36 that most of the damage to meters at the curb was caused by the lifting of the cast iron cover from the concrete meter tube. In many cases this was done without the knowledge of the Department, by various sidewalk contractors and in some cases by the city's own paving gang. It is anticipated that this can be remedied in the future. It was arranged that Department meter readers omit curb setting reading during the severe cold weather in order that the frost seal may not be broken. There were no unusual ways in which the meters failed. In the majority of cases, it was failure by loss of the frost-proof feature. In a few cases damage was done to the gears.

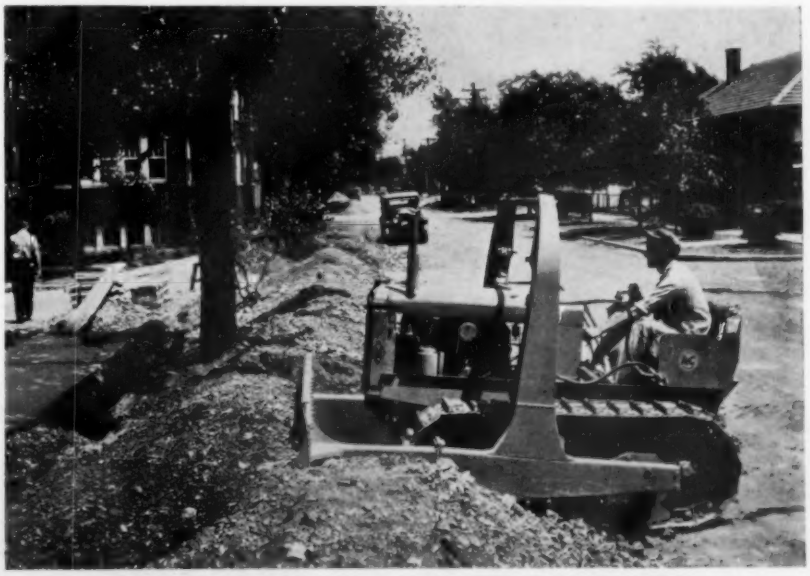
—From a paper presented by W. COMPTON WILLS, Chief Engineer, Water Department, Wilmington, Del., before the Four States Section, American Water Works Association.

Where the Water Went

THE 42nd Annual Report of the Board of Public Works of Holland, Mich., covering the year 1935, in its section devoted to the Water Department shows that 87.13 per cent of the water pumped was registered on consumers' meters. This accounted for 385,482,000 gallons of the total of 442,445,820 gallons pumped. It was estimated that 5,796,270 gallons was used for flushing sewers and 8,900,000 gallons for street sprinkling. This accounts for 90.45 per cent of the water pumped. The remainder, 9.55 per cent, was used for flushing mains and fire hydrants, quenching fires, backfilling of water and sewer trenches, under-registration of meters and possible leaks in the distribution system.

The Water Department received a total of $20,881.29 from the city of Holland for water supplied to its various departments, as follows:

Hydrant service	$17,600.00
Street sprinkling	1,200.00
Public schools	679.97
Public parks	742.20
Holland Hospital	411.96
City Hall, etc.	140.68
Public drinking fountains	83.46
Fire department houses	23.02
Total	$20,881.29



ALLIS-CHALMERS MODEL M TRACTOR WITH BAKER BULLDOZER BACKFILLING SECTION OF TRENCH ON 200-MILE WATER PIPE EXTENSION CONTRACT OF J. S. BARRETT AT CICERO, ILL.

At Last A PORTABLE DRILLING OUTFIT

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BARCO *Portable* GASOLINE HAMMER

Sewerage Notes from Illinois

Some Winter Troubles at Illinois Sewage Works

IN *The Digester*, issued by the Division of Sanitary Engineering of the State Department of Public Health of Illinois, there appeared a report on the troubles faced by some Illinois sewage works due to the unusually cold and stormy winter of 1935-36.

During the severe weather of early February, Bushnell experienced freezing in the settling and aeration tanks and in the troughs and piping, which forced Clark Hanks, sewage works operator, to shut down the plant temporarily. After a few minor repairs the plant resumed operation.

The operators at Macomb and Galesburg reported trouble with ice formations on their trickling filters, a difficulty which was quite common throughout the northern portion of the state. Interference with operation was not serious, however.

Both Centralia and Marion reported that it was necessary to take their sprinkling filters out of service for a few days in order to replace burst pipes. Freezing of dosing-tank piping is uncommon in southern Illinois. This trouble was forestalled at DeKalb by placing a loose plank cover over the dosing tank during the winter so that the heat in the sewage kept the piping from freezing.

Extremely high sewage flows following a heavy thaw caused considerable worry at Mount Vernon, Salem and West Chicago. The plants were all returned to complete service shortly after the heavy snow condition subsided.

The sad plight of the operators at the plants mentioned above prompted some poet in the Division of Sanitary Engineering to write the following verses. The author apologizes by stating, "Do not judge us too harshly, we were probably frostbitten last winter ourselves."

King Winter wrought havoc with ice, wind and snow.
He lost Corr's grit chamber, which filled Corr with woe,
And Hanks' plant at Bushnell was thoroughly frozen,
While Ogle at Toulon said, "Well, just supposin'
I didn't have snow shoes," but didn't complain.
Yes, men, last winter was just *one big pain!*

He bursted Stokes' dosing tank piping, but then
He was foiled at DeKalb by alert Donald Henn.
Hunt's sprinkling filters and Walt Thomas' too
Resembled an Esquimo's ice-bound igloo.
King Winter is gone now—his damage is past,
Let's hope that next winter is milder than last!

How to Overcome Bulking Sludge in Activated Sludge Plants

WHEN you have bulking sludge, find the cause first. The source of trouble may be an excessive load on the plant, an industrial waste, a poor digester supernatant liquor, an inadequate aeration period, insufficient air supply, too high or too low an aeration solids concentration, a stale return sludge or "what have you." Permanent correction depends on eliminating the cause. Some remedies that have been found helpful in Illinois are reported in *The Digester*, published by the Illinois State Department of Health. Most of these remedies are believed to be best applicable to cases of bulking which involve the presence of the thread-like fungus growths or filaments. Caution is suggested in using chemicals for controlling bulking, for excessive dosages may be harmful to the desirable working organisms in the sludge. Try to correct the bulking by operation adjustments first.

Chlorine applied to the return sludge at a dosage between 0.7 and 7.0 ppm, based on the return sludge flow, has been found helpful. Start with a low dosage rate and don't use too much.

Lime added at the inlet to the aerators, to raise the pH in tanks to from 8.6 to 8.8 for 4 to 6 hours, has controlled bulking. Begin adding lime as soon as bulking becomes evident. Application as a solution of hydrated lime is recommended.

Copper sulphate applied to the aeration tank influent at a dosage of 1.0 ppm is reported to be helpful.

Ferric chloride applied to the raw sewage has met with some success. A dosage of 54 to 66 pounds per million gallons of sewage has been recommended. The application of ferric chloride to the return sludge has also given favorable results.

Acid substances added to the aerator contents to lower the pH to 6.5 (no lower) discourages the growth of filaments. Hydrochloric acid is suggested to be added in a dilute solution.

The Rate of Activated Sludge Return

THEORETICALLY, it would seem desirable to return activated sludge as soon as possible from the bottom of the final settling tank to the inlet of the aeration tanks, but actually most plants use the final settling tank to store activated sludge for some time before return. The accumulation of a layer of activated sludge in the bottom of the final settling tank is called a "sludge blanket," and the present tendency is to minimize this accumulation as much as possible.

Where a sludge of high variable strength is received, it is usually desirable to return more activated sludge during the peak strength, in order to provide more working organisms at the time more work is to be done. In such a plant a 2- or 3-foot sludge blanket might be carried in the final settling tank during most of the day, so that these extra workmen or organisms will be available for service when the peak comes.

The rate of activated sludge return is of course closely related to the aeration period; a high rate of return reducing the aeration time, and a low rate of retur increasing it. On the other hand, the high rate of return brings the working sludge back into the presence of the air more quickly, thus increasing the activity of the sludge.

There is a definite danger in maintaining too thick a sludge blanket, because if the sludge is held in the final settling tank too long without oxygen being present, septic action may take place in the bottom of the final settling tank, which will cause large chunks of dark-colored sludge to rise to the surface, where they will break up and pass off in the plant effluent. Rising sludge in the final settling tank is an indication that opportunity is being given for septic action to take place in that unit. A septic or stale return sludge may also cause bulking.

—From *The Digester*, Illinois State Department of Health.

Dubuque Can Do All Pumping without Current

IT is now possible for the Water Department of Dubuque, Iowa, to supply the entire city with water without the use of electric power in case of an emergency. At the Eagle Point Station, 2,500,000 gallons per day can be lifted from an artesian well by gasoline power and boosted into the West Third Street reservoir by two reserve high-lift steam pumps. For the high-service and Hill District a 2,000,000-gallon-per-day gasoline high-lift pump has been installed at the Level Station. With a 2,500,000-gallon supply at Eagle Point, a 300,000-gallon flow from the Level Tunnel, and a minimum of 5,000,000 gallons storage in the West Third Street Reservoir, there is a sufficient supply to take care of any emergency for both fire protection and domestic service.

Owing to the increased consumption necessary to supply the Hill District, the Water Department with the assistance of a 45 per cent PWA grant has erected a 750,000-gallon elevated tank and tower at West Third Street at a cost of $60,000. This provides a 24-hour storage instead of a 3-hour reserve previous to the completion of the tank. The pressure in the District has been increased, as the water is stored at an elevation 20 feet higher than formerly.

JOHN W. MCEVOY,
Superintendent, Water Department.

5 REASONS *why* DUMP TRUCK OPERATORS SAVE MONEY WITH HIGH PROFILE GOODYEARS

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3 High Profile Tread Shape increases flexing zone, dissipates heat more readily, provides better cushioning —puts more rubber on ground.

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But you get BOTH—and more, too—in the new High Profile Goodyear for trucks.

Bigger, sturdier, tougher—you'll find this tire better in every way on the job—better in traction, in cushioning, in driving.

And it's safer. It gives you protection against both skidding and blow-outs—against carcass failure of any kind—not equalled in any other tire.

Why this amazing *plus performance?*

Because only Goodyear—in this new High Profile Truck Tire—offers you the five money-saving, *plus construction features* opposite.

Read them. See the tire. SAVE MONEY!

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GOODYEAR

TRUCK TIRES *money savers*

There's a GOODYEAR BATTERY *now!*

Street Cleaning—Snow Removal—Incineration

A LINN TRACTOR WITH SNOW-PLOW OPENING UP A SNOW-PLUGGED ROAD IN WALWORTH, N. Y., LAST FEBRUARY IN SUB-ZERO WEATHER

Street Cleaning by Assessment

IN March, 1936, an ordinance was passed by the Village Council of Westerville, Ohio, directing the sweeping and cleaning of all streets in the village, the costs to "be assessed upon the lots and lands bounding and abutting upon each of said streets, by the front footage, which said lots and lands are hereby determined to be specially benefited by said work and in an amount equal to the cost thereof."

The ordinance provides that assessments be levied and payable on the first day of May, and if not paid within 10 days, are subject to a 5 per cent penalty. The street-cleaning rates per front foot for 1936 vary from 1 and 1½ cents per front foot to 5 cents for sections of the three most important streets.

Cost of Street Cleaning in Oak Park, Ill.

THE population of Oak Park is 67,500, and it has a total area of 4½ square miles. There are 107.75 miles of paved streets. All paved streets are cleaned once every ten days in the residential districts except during the winter. The business streets are cleaned daily.

An Austin motor pick-up sweeper was used for the cleaning of two districts having a total of approximately 3,177 gutter miles. Another section totaling 2.925 gutter miles is cleaned by hand.

During 1935, according to the Annual Report of the Department of Public Works, 9,800 cubic yards of dirt and leaves were removed at an average cost of $1.902 per cubic yard. A total of 6.102 gutter miles of streets were cleaned at an average cost of $2.602 per gutter mile. Estimating the average width cleaned as 18 feet, the total number of square yards swept was 32,218,560, or an average cost of $.000493 per sq. yd.

Street-cleaning expenditures included $15,001.55 for labor, of which $2,758.75 was for cleaning in the business districts, which is not included in the number of gutter miles of streets cleaned. Superintendence cost $1,201.20, teams and trucks $1,132.30, maintenance of the motor sweeper $1,088.66, and miscellaneous supplies and equipment, $215.30, making a total expenditure of $18,639.01, for 1935.

New York City Purchases Big Snow-Fighting Fleet

WITH sad memories of a large percentage of the mileage of New York City streets tied up for months last winter, the city has made a noble effort to be prepared for similar occurrences next winter by the purchase of nearly $1,000,000 worth of snow-removal equipment.

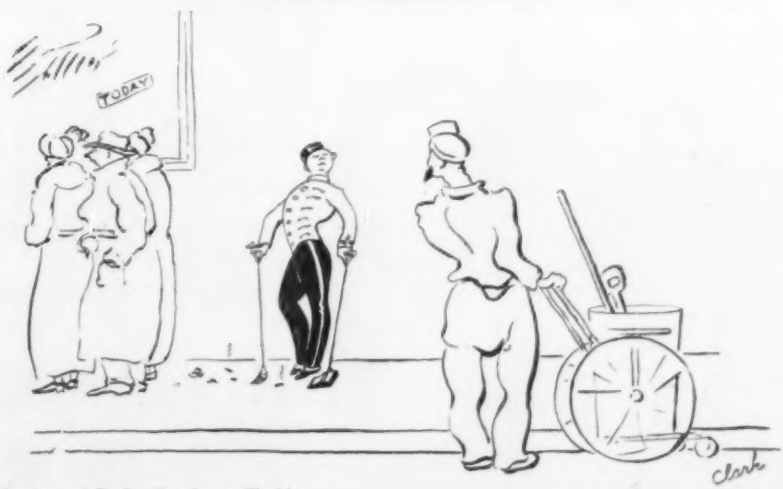
After unusual tests of five types of machines, staged at the foot of East 22nd Street, using blocks of ice, which were not firmly frozen to the street, as the material for the machines to attack, the Board of Aldermen decided to split the order between two machines, the Snogo, made by the Klauer Manufacturing Co., Dubuque, Iowa, and the Joy Manufacturing Co., Franklin, Pa. The former machine has been used most successfully for many years in state highway work. It consists of a motor truck on which series of rotating spirals with saw teeth are mounted ahead of the front wheels. The spirals deliver the snow and broken-up ice to the center of the machine, where a large, heavy fan sucks it through and delivers it to a chute at the top. This curved chute may be turned to either side to deliver snow to trucks, or, in the case of work in the open, it can throw the snow a considerable distance beyond the right-of-way.

The Joy machine is essentially the same at the front, having spirals delivering the snow, in this case, however, to a long elevator which delivers the material over the back of the machine to trucks, backing as the machine goes forward. The advantage of this machine is that it requires but one line of traffic, according to the discussion in the Board of Aldermen, but it is difficult to understand how a machine like the former, which is opening up a lane of traffic itself, really blocks more than one lane with the trucks it is loading.

The complaints of "disgruntled taxpayers" and others in letters to the editors of New York papers last winter, expressed disgust that the snow and ice were not removed more quickly. In spite of the large fleet of machines the city is purchasing, it is doubtful whether they would be any more successful if a repetition of last winter's weather occurs. The initial storm which caused the trouble started as sleet, turned to snow, and ended in a cold spell during which the temperature was well below freezing for over a month, so that the material on the streets was a very hard ice, well bonded to the street surface. It was suggested several times to street-cleaning officials that a judicious sprinkling of calcium chloride over the 1-foot layers of ice on the streets would so riddle the ice that it might be broken up and removed more readily.

No Snow-Removal Worries There

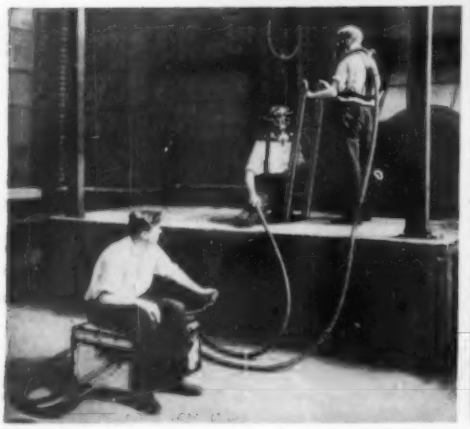
A UNITED PRESS dispatch dated September 11 from Cape Town, South Africa, reported that snow fell on that day in parts of South Africa which had not seen snow for 90 years. Springbok Flats, one of the hottest spots in the northern Transvaal, received a light blanket, as did Johannesburg, Reitz, Frankfort, Newcastle and Dundee.



Courtesy of Rockefeller Center Weekly

Like leaving your lungs outside!

M·S·A HOSE MASKS



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WHAT PRICE DELAYED ALARMS?

FIRE LOSS— **$4,000,000,000**

Statistics compiled and published show the national fire loss for ten years—1926 to 1935 inclusive—to be in excess of the above figure.

Nearly all fires may be extinguished in their incipiency by a bucket of water.

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Are your citizens not entitled to this protection?

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NEWTON MASSACHUSETTS

Public Safety

*Remarks**

By J. Edgar Hoover, Director, Federal Bureau of Investigation

THE Federal Bureau of Investigation has inaugurated a national stolen-property file during the past year. It is my hope to compile, at Washington, complete information relative to stolen property, which will enable the individual police organizations of the United States to obtain, through this national clearing house of information, data to identify any property stolen, or information that such property is recovered, pawned or disposed of otherwise. I confidently hope that this file eventually will serve a purpose similar to that effected by our Identification Division, which now acts as a reservoir of information of the complete criminal histories of all persons arrested and charged with crime.

Fingerprints

Only a few days ago, there reached the Identification Division of the Federal Bureau of Investigation the six-million-three-hundred-thousandth fingerprint card as contributed by over 10,000 agencies in America, supplemented by 76 agencies from the rest of the world. And when you realize that it was only 35 years ago that the Henry System was inaugurated at Scotland Yard, and 33 years ago that the first fingerprint bureau in the history of American penology came into being, this is indeed remarkable progress.

In an endeavor to bring to the police officers in the field some of its identification facilities, the Federal Bureau of Investigation several months ago announced that fingerprint identification schools would be conducted in each of its thirty-seven field offices as soon as circumstances would permit. There have been five of these schools conducted to date. These schools, which cover a period of approximately five days, have been well attended. It is my personal feeling that these schools will do a great deal to crystallize and standardize systems and pattern interpretations of a technical nature, and also will aid materially in the education of officers concerning the latest methods of the development and presentation of latent evidence in court.

New Weapons

There are being offered for sale weapons which will tear their way through hitherto allegedly bulletproof vests as though they were mere paper, and so far beyond the reach of the average police appropriation that they offer to criminals, with their greater ability to pay, not only a new temptation to begin a wave of police killings but a measure of safety against apprehension not equaled in police history.

I refer to the new type of revolvers and ammunition recently put upon the market. They are said to be made for sporting purposes, but inevitably some of them will fall into the hands of criminals. I submit that the only game that will fall before their deadly fire will be the law-enforcement officer. It is too great a waste of life when 10 per cent of the fatalities occurring in the battle between lawless elements and the law-enforcement officers represent the death in line of duty of fearless officers.

Federal Parole System the Best Example

We are victims of a plethora of parole. It is needless; it is useless; it is dangerous. With examples before them of the finest parole system ever devised, namely, that of the Federal Parole System, state after state still clings to antiquated, destructive, and wholesale freeing of men under the guise of parole who in truth are being turned loose with practically no supervision whatever, again to prey upon honest citizens.

* Excerpts from several convention addresses by Mr. Hoover.

Cranford, N. J., Now Uses Two-Way Police Radio

THE city of Cranford, N. J., has converted its one-way ultra-high-frequency police radio to two-way of General Electric make. The new system has been in operation since May 15. The two Plymouths and one Chevrolet car patrol 4.79 square miles of territory. Average time from receipt of signal to arrest is 5 minutes.

Two-Way Radio for New York City Fire Department

TWO-WAY radio for the New York City Fire Department is planned for this year, to include a transmitting set in the Fire College building in Long Island City, and equipment on the nine fire-boats. Receiving stations will be located throughout the city for relaying messages from the fire-boats to headquarters. Funds in this year's budget provide for this work, and additional funds will be requested for equipping 35 official automobiles with two-way radio. Six cars are already equipped with receivers tuned in on police-department wave lengths. Plans for this installation are practically complete.

Scout Patrol Carries 'Em Sick or Otherwise

WINCHESTER, VA., combines a scouting car and a patrol wagon, resulting in a fast car that will also safely carry five or six prisoners. The commercial Dodge sedan shown here is capable of a speed of 80 miles per hour. The rear interior is lined with sheet iron and there are shatterproof glass windows front and rear. The rear door can be opened only from the outside. The car has low bench seats on each side, and it can be used as an emergency ambulance, as shown.

The cost of this motor vehicle, complete, is about $700.

ARTHUR M. FIELD,
City Manager, Winchester, Va.

SCOUT-PATROL-AMBULANCE USED BY CITY OF WINCHESTER, PA.

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INFORMATION HELPS HIGHWAY OFFICIALS MAKE ICY PAVEMENTS SAFE AT LOWER COST . . .

For many years, International Salt Research Laboratory has cooperated with municipal, state and county highway engineers and officials in developing the best method for making icy pavements safe at lowest possible cost with rock salt.

The results from this long experience and study are now available in a new, concise, authoritative booklet—"Make Icy Pavements Safe with Rock Salt." Included in this booklet

COMPARISON OF MELTING CAPACITIES
OF SODIUM CHLORIDE AND CALCIUM CHLORIDE
POUNDS OF ICE MELTED PER POUND OF CHEMICAL
Rock Salt . . .
Economical and Effective

are the results of tests made by the Maintenance Committee of the Highway Research Board. These tests show that at temperatures most frequently encountered during winter months, rock salt is the most effective chemical tested.

This free service-booklet also contains detailed directions for using rock salt, either to prevent ice formation or to make pavements safe after ice has formed. It describes correct methods for using salt alone or combined with other abrasives.

Every year, International supplies street and road officials with thousands of tons of rock salt for winter use. A widespread organization places an International representative within easy reach of almost every highway or city engineer or official. Take the utmost advantage of this complete production, research and service. Mail the attached coupon for your free copy of International's new book.

FACTS ABOUT ROCK SALT USED FOR WINTER HIGHWAY SAFETY

ECONOMY
Costs far less than other chemicals.

EFFECTIVENESS
Better and longer lasting embedment action with abrasives—begins to melt ice at once—retains melting action longer. More effective, pound for pound, than other chemicals.

ADDED SAFETY
Used alone or with abrasives, cuts through icy surface—no slippery surface puddles—undercuts and honeycombs ice for quick, easy destruction and removal.

USED ALONE
Spread at rate of ¼ to ¾ lb. per sq. yd. of icy surface.

USED WITH ABRASIVES
Mix at rate of 25 to 50 lbs. per cubic yd. of abrasives.

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New Streets, Maintenance, and Accidents

West Middle Street, Chelsea, Mich.

DUSTY BEFORE

—AND DUSTLESS AFTER

STABILIZATION WITH BINDER SOIL AND CALCIUM CHLORIDE

Traffic Clogging Stopped in Charleston, W. Va.

A YEAR ago the principal street in South Charleston, W. Va., over which U. S. 60 travels, was a distinct traffic hazard. Its old high-crown, narrow 16-foot pavement was wholly inadequate for the average daily traffic of 4,200 passenger cars and 460 trucks. Near the westerly city limits a narrow 16-foot roadway, 45-foot span bridge added to the inconvenience and danger to traffic.

Through the cooperation of the State Highway Department a new concrete bridge is being built to replace the narrow structure, providing for a 40-foot roadway with a 5½-foot sidewalk on one side. The estimated cost of the new structure is $57,000. The street improvement included 1,568 linear feet of 20-foot and 6,200 linear feet of 30-foot concrete pavement, 4,600 linear feet of 15-inch storm sewer, 5,550 cubic yards of excavation, 3,000 cubic yards of borrow, and 5,775 linear feet of curb.

At street intersections flat crowns and large radii curbs were built for the convenience and safety of modern traffic entering and leaving the intersecting streets. The pavement cross-section was of the thickened edge balanced design, heavy-duty type, being 6.7 inches in thickness of the center and 10 inches at the edges of each 10-foot lane. Expansion joints were placed at 93-foot intervals, and intermediate contraction joints at 31-foot intervals. The entire paving project was completed May 1, 1936.

Street Openings for Utility Repairs

DURING 1935 in Oak Park, Ill., according to its Annual Report, applications for openings in streets were received and approved for 549 openings. These openings were made in the following types of pavements and locations:

Concrete pavement	2
Asphalt pavement	67
Brick pavement	9
Macadam pavement	12
Paved alleys	66
Sidewalk	2
Unpaved alleys	4
Parkways	387

Wherever applications were made for opening paved streets, investigations were made first and no application was approved unless it was absolutely necessary.

In most of the instances of openings by the Public Service Co., the openings were to repair leaks in mains, to install larger mains or to install services where property had been divided into smaller lots than originally platted. There were several applications during the year for street openings in connection with the installation of larger water service pipes for lawn sprinkling systems.

The Water Department openings were for the installation, in most cases, of new fire hydrants or valves, preceding new street improvements. The Public Service Co. applied for 381 openings, the Water Department for 27, the Illinois Bell Telephone Co. for 14, and there were 127 miscellaneous applications, making a total of 549.

On all street openings the Street Department requires that all excavated material from the opening be removed by the party making the opening. The work of backfilling and repairing the street openings is made by the Street Department. All backfilling is sand, and a concrete base 8 inches thick is placed under the wearing surface of the permanent pavement on the street. The cost of this work is charged to the party making the street opening.

Municipal Accounting for Service Rendered

MUNICIPAL accounting differs from general commercial practice. Civic accounting statements present a story of service rendered, whereas the commercial statement is one of profit and loss. In municipal accounting appropriations are authorized for specific service. It is therefore necessary that all liabilities, commitments, etc., be recorded against the authorized appropriation in advance of the actual receipt of materials, etc., in order that the true standing of the appropriation may be demonstrated. This is a factor essential to proper accounting and control.

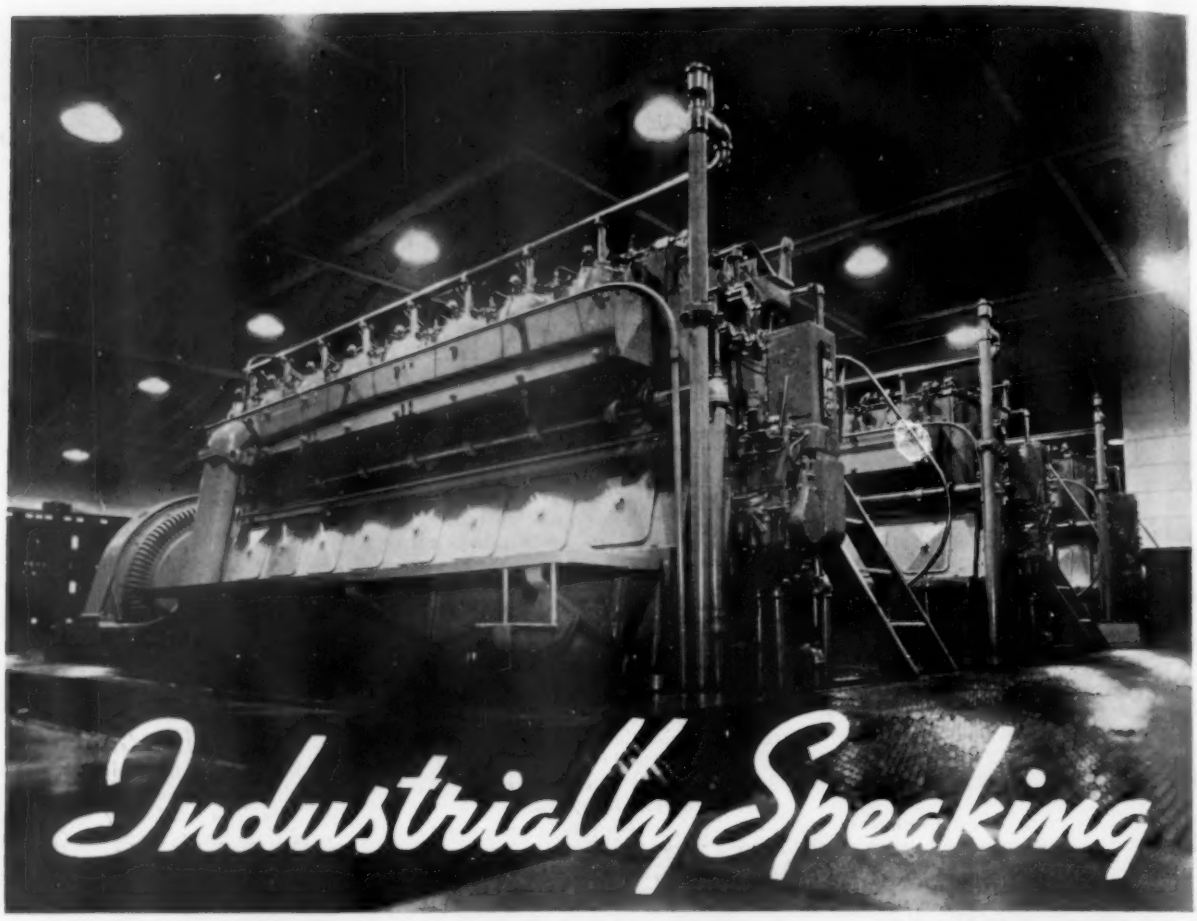
—From a paper by R. C. HARRIS, Commissioner, Department of Works, Toronto, Ontario, presented at the 1936 Public Works Congress.

Street and Highway Accidents in England

IN England, a study of 837 highway accidents in which road conditions were supposed to be contributory shows that the conditions most frequently blamed are slippery pavements, which was the cause in 425 cases, or more than 50 per cent of all accidents reported. The fact that street-car tracks and paving were mentioned in 112 more cases lends additional testimony to the importance of slippery surfaces as a factor in highway accidents. A third frequently cited set of conditions was poor visibility and blind corners. Other factors mentioned were: obstructions, including parked vehicles; defective shape of road; excessive crown; lack of superelevation; inadequate lighting; dangerous curves; poor alignment; bottlenecks; inadequate widths; and surface in bad repair.

—From *Concrete Highways.*

THESE TWO CATERPILLAR DIESEL PATROLS, OWNED BY THE CITY OF MINNEAPOLIS, ARE USED TO SCARIFY AND REGRADE OUTLYING CITY STREETS



WINTON-DIESEL POWER
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Symbol of Economy and Dependability

Above: A recent installation in a municipal light and water plant. Three 8-cylinder 700 h.p. four-cycle Winton-Diesel engines with direct-connected generators and exciters

MODERN industrial power problems are solved best by those conversant with your need for efficient plant operation. Speaking in terms of economy, dependability, versatility and cleanliness, Winton-Diesel power provides common ground for agreement. A comprehensive experience of more than twenty-five years in powering industrial plants has ripened the knowledge of Winton engineers, making possible a personal understanding of diversified industrial requirements. Experienced Winton representatives are ready to aid you in solving your individual power problems. An inquiry will result in immediate cooperation.

WINTON ENGINE CORPORATION
CLEVELAND · OHIO · U. S. A.

NOVEMBER, 1936

Vol. LI, No. 11

The American City

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New York

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Asphalt Plank Pavement Bridge Floor

Design of Flooring for Harlem River and Bronx Kills Lift Spans of the Triborough Bridge, New York

By ENOCH R. NEEDLES
Ash-Howard-Needles and Tammen, Consulting Engineers

THE Triborough Bridge has recently been opened to traffic. The cost of this undertaking is approximately $60,000,000. The project comprises bridges over the East River at Hell Gate, the Harlem River and Bronx Kills; with extensive viaduct connections between the bridges, and very elaborate, extensive and expensive highway approaches. In reality, a new and major traffic artery has been provided between the boroughs of Manhattan, Bronx and Queens in the city of New York, under the jurisdiction of the Triborough Bridge Authority.

The Harlem River is bridged with a large vertical lift span which may be raised to permit navigation to pass beneath. Bronx Kills is not now navigable, but will become so in the future. Hence Bronx Kills is now crossed by a large fixed span which is designed and constructed to be converted into a vertical lift span when future navigation demands. These two lift spans have much larger roadway areas than any previously designed, the Bronx Kills span having about twice the area of any previous lift span.

PAVEMENT FOR THE LIFT SPAN OF THE HARLEM RIVER CROSSING OF THE TRIBOROUGH BRIDGE

1. The span raised. 2. Laying a section of thin asphalt plank in asphaltic cement on the silicon steel plate floor. 3. Close-up of laying asphalt plank. Note partial outlines of 10 x 20-foot sections into which roadway area is divided by low vertical steel ribs. 4. The completed floor, showing the non-skid surface

Pavement Dead Loads

Bridge floors and pavements are always highly important, but vitally so on movable spans, long fixed spans, and spans which require roadway reconstruction to provide for modern heavy highway traffic. Where dead load becomes a highly important economic factor, a relatively expensive bridge floor and pavement may be justified to secure light weight. Dead load on a large movable span becomes vital because of its direct relation to operation of the span. The load of the moving span must be balanced by counterweights, and the total moving load determines the mechanical and electrical design. Any increase in weight in the lift-span floor and pavement has a marked effect on the entire structure, including not only the floor and trusses of the lift span, but also the towers, the counterweights, the suspending ropes, the machinery, the electrical equipment, power consumption during operation, and even the piers.

The securing of a light-weight floor and pavement on the Harlem River and Bronx Kills lift spans was imperative because of their size. The floor design had to be determined before the design of the remainder of the structures could be completed. It was recognized that both floor and pavement must be suitable for very heavy metropolitan traffic. The floor must be not only strong but rigid and stiff, with negligible deflection under heavy wheel loads. The pavement should be durable, non-skid, preferably quiet, and obviously smooth. Maintenance and possible replacement of the wearing surface had to be considered.

Notable developments have come in recent years with regard to bridge floors. It was about ten years ago that these advances began. Previously, the usual fireproof bridge floor consisted of a reinforced concrete slab, supported on stringers or cross beams, and generally carrying a wearing surface of other materials. If a light-weight floor were demanded in those days, it was common practice to use a creosoted timber decking, often with a wood-block wearing surface, and occasionally with an asphaltic wearing surface or with thin steel traffic plates spiked to the timber deck. In still earlier years, steel buckle plates had been used, with concrete filler and a pavement additional.

Studies of Bridge-Floor Types

The recent developments in bridge floors were taken fully into account in the floor studies for the Triborough lift spans. The following types of floors and pavements were analyzed in detail:

1. Carbon and silicon steel plate floors with thin asphalt plank wearing surface
2. Interlocking steel channels, with filler material and thin wearing surface
3. Steel grating of different types, concrete filler and thin wearing surface
4. Open steel grating with no added wearing surface
5. Concrete slabs and wearing surface, with steel reinforcing trusses
6. Aluminum alloy floor types

The studies of these types were both structural and economic and were made as truly comparable as possible. Each design took into account the effects upon trusses, towers and operating equipment. The reinforced concrete floor showed up unfavorably as to cost because of the effect of the greater weight upon the operating machinery. Between the different light-weight floors there was no great variation as to cost, so that a rather free choice was possible. The silicon steel plate floor with thin asphalt plank wearing surface was finally selected. This type showed up favorably in cost comparisons; it had the advantage of light weight, only the open grating being lighter; permitted the use of a standard asphaltic wearing surface; avoided the use of patents on floors, thus giving free competition; secured simple and substantial construction; and promised simple maintenance at low cost.

Six traffic lanes are provided over Harlem River, three in each direction, with a central barrier between. For Harlem River, the lift-span roadway has a total width of 70.71 feet, the span length is 310 feet, and the total roadway area about 21,900 square feet. For Bronx Kills, the lift-span roadway has a total width of 90.71 feet, the span length is 350 feet, and the total roadway area about 31,000 square feet.

Thin Asphalt Plank Surfacing

The use of a thin asphalt plank wearing surface was decided upon after very thorough investigation. The 1-inch plank with mineral surfacing of today is very different from the plain 2-inch plank in rather common use ten years ago, or even five years ago. The old thick plank was not very satisfactory. There were no comprehensive specifications governing composition and manufacture, and there were no physical tests of consequence specified for the finished plank. Probably it is fair to state that the thick plank of ten years ago was a by-product of the manufacturers of other asphaltic products, in which various scrap materials were dumped together, heated, and extruded. The resulting planks frequently had low non-skid qualities, the weights and composition varied greatly between different manufacturers or for the same manufacturer, some planks were much too hard and others much too soft. There were practically no standards as to toughness or as to brittleness.

The modern asphalt plank is more a quality product. Its manufacture is a closely controlled process. The materials which enter into its composition are carefully selected and proportioned. Uniformity of weight and dimensions is required. Definite characteristics as to hardness, toughness and lack of brittleness must be attained. A definite non-skid characteristic is obtained through the mineral surface, which consists of stone chips pressed into the top surface of the hot plank. This plank is made satisfactorily to a thickness of 1 inch, an obvious advantage in the development of a light-weight bridge floor. On the Triborough lift spans, the 1-inch thick plank laid over the $\frac{5}{8}$-inch silicon steel plate provides a total floor thickness of substantially $1\frac{5}{8}$ inches.

Before thin asphalt plank was selected as the wearing surface for the Triborough lift spans, other previous installations were examined. Particular attention was given to installations which had been subjected to severe truck traffic in the New York area. The particular specifications for the manufacture and laying of the plank were developed after conferences with leading plank manufacturers, and after the making of laboratory tests had been observed. These specifications covered the composition of the plank in regard to bitumen, fiber and mineral filler, as well as the mineral surface. Close limits were given with regard

to dimensions and weight. Physical tests were set up for hardness and toughness of the finished plank. Triborough inspectors observed the manufacture and testing of the plank, as well as the laying of it. The installation of the plank was carefully outlined.

Laying the Plank

On both lift spans, the asphalt plank is laid in sections, the area of each section being one traffic lane, or about 10 feet wide and about 20 feet long. These sections are defined by vertical steel ribs welded accurately in place to the steel plate floor. The ribs are ⅜-inch wide and 13/16-inch high, and they provide definite barriers against objectionable shoving or creeping of the plank under traffic. In addition, the ribs provide definite areas in which future repairs or replacements of planks may be made without disturbance to adjacent sections. Shop drawings were required to show the plank dimensions for manufacture, so that the cutting of planks would be a minimum, the areas between ribs would be snugly filled, and plank joints would be uniform in alignment. Close joints were secured by wedging. The asphalt planks were laid down in a thin bed of cut-back asphaltic cement. They were laid in a neat and workmanlike manner and present a satisfactory appearance.

O. H. Ammann is Chief Engineer for the Triborough Bridge Authority and Colonel H. W. Hudson is Engineer of Construction. Inspection of materials was under George L. Lucas. Plans and specifications for the Harlem River and Bronx Kills lift spans were prepared by Ash-Howard-Needles & Tammen. The planks for the Harlem River lift span were manufactured by the Philip Carey Co. Those for the Bronx Kills span were manufactured by the Johns-Manville Corporation. These pavements began to carry traffic on July 11, 1936.

Cincinnati Duplicates Three-Year-Old Effective Sewer-Cleaning Truck

THE effective service rendered by a unique type of sewer-cleaning truck in Cincinnati, Ohio, has led to the addition of another unit of the same type this year. Sewer cleaning is done by the Division of Highway Maintenance of the Street Department.

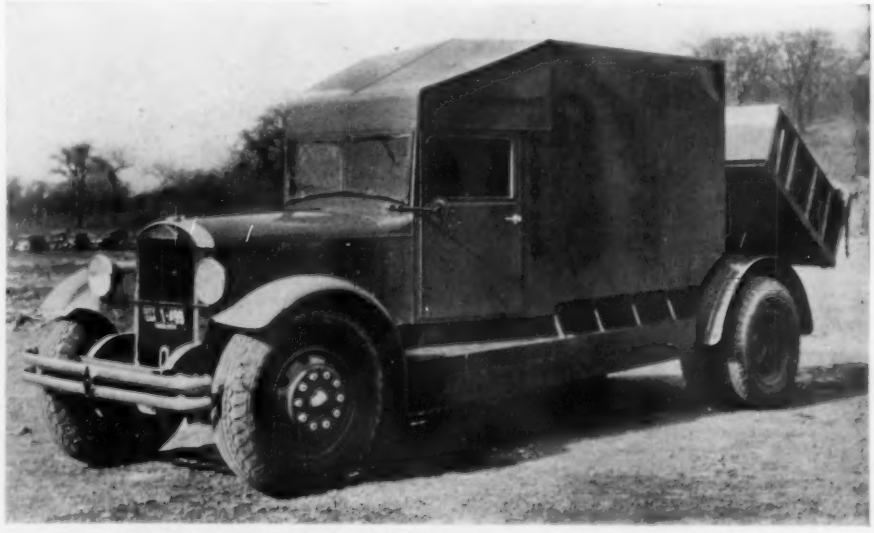
The chassis is powered with a Hercules motor developing 350 foot-pounds torque, and has a Wisconsin double reduction rear axle to deliver this power to the wheels. The truck frame is of nickel steel sufficiently braced so as to be able to carry a dump-body mounted on the extreme end of the frame as illustrated.

The covered body is arranged to carry complete sewer-cleaning equipment consisting of 300 feet of 2½-inch fire-hose, 500 feet of sewer-cleaning rods and complete root-cutting and sewer-dragging equipment, together with the necessary long-handled spoons, shovels and all necessary tools for efficient sewer cleaning. A separate compartment is maintained for the different tools, all of which are accessible from the street without climbing into the truck. A 1½-yard dump-body with hydraulic hoist is mounted in the rear of the main body of the truck. The cab is equipped to comfortably seat the crew consisting of five men and the driver.

The main body of the truck is also used as a dressing room for the crew, eliminating the necessity for changing clothes in the sewer manhole.

Prior to the installation of this well-equipped special truck, two trucks were used, one a dump-truck and the other used to haul the men and equipment. With the present single unit, one driver's salary and considerable time are saved, greater comfort is afforded the crew, and more rapid and efficient work is done, especially on emergency calls when it is necessary to get the crew together at night. With the heavy power plant in the truck, little difficulty is experienced in pulling a root cutter or a sewer-cleaning disc through the sewers from one manhole to the other to clear away any obstructions.

The entire unit was designed by W. E. Meyers, Supervisor of Equipment, Highway Maintenance Division of the city of Cincinnati, assisted by Stanley G. Richt, of Biederman Motors Corporation, Cincinnati, Ohio, which furnished the truck.



THE COMPLETE SEWER-CLEANING UNIT IN CINCINNATI, WHICH IS BEING DUPLICATED BECAUSE OF ITS EFFECTIVE WORK

Relief Model of New York Region Aids County Planning

THE New York Regional Plan Association is the possessor of a new relief model of the New York Region, the first public display of which was made on October 1. It is the product of two years' detailed and laborious work as a WPA project. The Graphic Regional Plan of New York was published in 1929, and this model is the first presentation to the public of the most up-to-date version, which has evolved since that time.

The model was built up from topographic maps, and presents accurately the contours of the land throughout an area of about 78 x 86 miles. New York City Hall is central to east and west, and the model extends over 30 miles south of City Hall and about 55 miles north of it. The horizontal scale is 2,000 feet to the inch, with the vertical scale exaggerated four times, or 500 feet to the inch. It is in 15 sections, and the assembled model measures about 18 x 20 feet. Each of the sections corresponds to two standard Geological Survey Maps.

The hills, valleys, marshes and waterways are carefully shown, even to the under-water contours and channels. To enable the individual to orient himself, the boundaries and names of all counties and municipalities have been plainly marked, as well as the names of prominent landmarks and the elevations of principal mountain ranges. Ten-mile circles from New York City Hall are shown. The model is painted to bring out all the principal existing land uses and major transportation facilities, and the extensions to these uses and facilities proposed in the Graphic Regional Plan are indicated. Those areas most suitable for the expansion of large industrial and port developments and residential centers are outlined. The parkways and public beach developments in Westchester County and Long Island make a striking appearance. The bridges over major waterways are shown by miniature models and demonstrate the importance of such structures as the George Washington Bridge, Pulaski Skyway and Triborough Bridge. Emphasis is placed on the proposed Metropolitan Loop Highway, which is already largely completed, and which goes around the northern section of the Watchung Mountains in New Jersey to avoid the densely built-up areas in eastern Essex County.

A most valuable feature of this relief model of New York and its environs is the possibility of its duplication in sections for the use of local planning boards. Inverse molds have been prepared for each section, so that duplicates can be made at comparatively little expense. The Morris County Planning Studies Committee has already obtained two copies of the Morris County section of the model. The New Jersey sections will be reproduced by the New Jersey State Planning Board, and the Rockland County section by the County Board of Supervisors.

Model by Works Progress Administration, Cartographic Study; photograph by Herbert Bruce Cross

NORTH AND CENTRAL PORTIONS OF RELIEF MODEL OF METROPOLITAN REGION, NEW YORK, WITH THE GRAPHIC REGIONAL PLAN PAINTED ON ITS SURFACE

New Water-Supply Method Used in England and Portugal

System Developed in United States Gains Foreign Acceptance

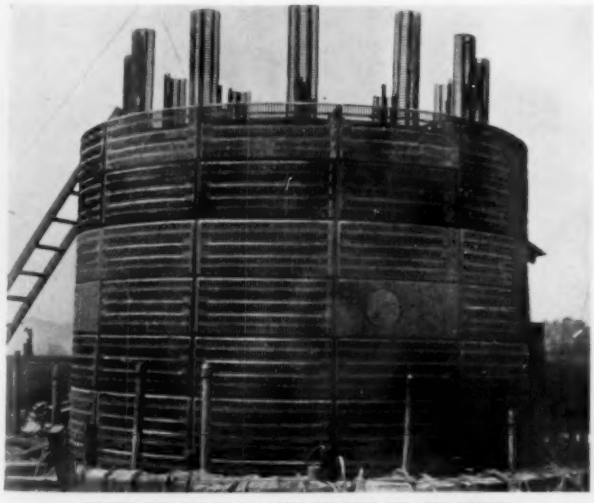
INSTALLATIONS of a novel type for collecting ground water have been designed by American engineers for an emergency water supply for London, England, during a severe drought and for a new water supply for Lisbon, Portugal. The method consists in installing screens as part of, or from within, a shaft. This is the outcome of the experience of oil and water mines and offers distinct advantages for municipal water supplies. The first unit was built for the Metropolitan Water Board of London in 1934, and another installation is being supplied to the Lisbon Water Co. in Portugal.

Several different processes and corresponding types of Ranney water collectors are available, permitting adaptation to various geological or hydrological conditions. Underlying principles in all cases consist of: (1) exposure of a very large surface of water-bearing material to the collecting screens; (2) selective removal of the fine material from the ground adjacent to the screens; and (3) independent control of, and backwashing facilities for, the separate sections of screen.

A shaft is sunk down to the water-bearing material, the shaft being equipped with an extensive screen area divided into a number of independently controlled sections.

The London Installation

The severe drought in the summer of 1934, coming after a two-year period of deficient rainfall, greatly reduced the discharge of the Thames River, on which London relies for the major part of its supply. The flow fell to such an extent that heavy withdrawals were made from the surface storage reservoirs. In June and July restrictions on water consumption were imposed. By special measure, the statutory minimum discharge of the Thames at Teddington beyond which no abstractions by the Metropolitan Water Board were allowed, was temporarily lowered.



EXTERIOR VIEW OF THE LISBON SHAFT, SHOWING THE SCREEN SECTIONS IN THE OUTER SHELL

INTERIOR OF THE COLLECTOR AT LISBON DURING CONSTRUCTION, SHOWING THE SCREENS AND INNER SHELL AND THE CONTROL VALVES FOR EACH SECTION OF SCREEN

Among the supplementary sources of supply that were drawn upon to meet the emergency was the water stored in the surface beds of sand and gravel in the Thames Valley between Kempton and Staines. The conditions appeared suitable for the installation of a Ranney collector of the radial type, as the unconsolidated water-bearing material was very shallow, 20 to 25 feet deep, below which was a thick bed of impermeable clay. It was necessary to build the unit for use as an auxiliary source of supply in the quickest possible time. By using improvised equipment, the collector was in operation nine weeks after the order was placed.

The collector consists of a circular well 12 feet 6 inches in diameter and 22 feet deep, built of standard cast iron tunnel segments. A concrete invert was poured in the bottom, and the shaft was unwatered. Close to the bottom nine 7-inch internal diameter perforated steel screen pipes were projected horizontally and radially into the ground through specially designed portholes fitted in the walls of the shaft. The novelty of the method consists in the removal of fine material in the path of the pipes by means of a patented boring head.

The radial pipes were pushed out in 5-foot sections with a special hydraulic jack assembly to as great a distance as 165 feet. In view of the coarse material encountered, this would not have been possible if the ground was not loosened ahead of the pipes by the removal of a considerable volume of the finer ground or sand. The actual projection of the pipes was stopped by the rising of the underlying clay at some distance from the shaft. It is

quite practicable to push out pipes over 200 feet in ground consisting only of unconsolidated and water-bearing material. The total wetted depth of the material overlying the clay was only 6 feet when the unit was completed in September. The production from the four largest pipes, the other five having been first experimented with, was at first over 3,000,000 gallons per day. As the storage in the immediate vicinity of the well was depleted, the yield dropped to 1,800,000 gallons per day, at which it remained for two months, until the end of the drought. It was observed that all but a few inches of the total original head of 5 feet above the screen pipes was used for bringing the water laterally from a considerable distance towards the radiating pipes. Later, when the water table was back to normal, that is, about 8 feet below the surface and 12 feet above the top of the clay, or 11 feet above the screen pipes, the production of the screen pipe was tested, and the total stable production was estimated at over 4,000,000 gallons per day.

The total screen area that was installed was about 1,000 square feet, which gave 150 square feet of screen openings. The average velocity of the water through the screen openings was consequently 0.02 feet per second, which resulted in an insignificant drop of pressure at the screens. Assurance is thereby given that no incrustation will occur on account of the liberation of carbon dioxide gas and the formation of calcium precipitates.

This same Ranney unit was again employed for approximately two months during the lesser drought in 1935. The Metropolitan Water Board of London has built a permanent housing over the well, which is being provided with a steam pumping plant of 2½ million gallons daily capacity. The whole installation now forms an integral part of the equipment of the Metropolitan Water Board and will be used when large enough abstraction from the Thames is not practicable and the use of supplementary sources of supply is necessary.

The Lisbon Installation

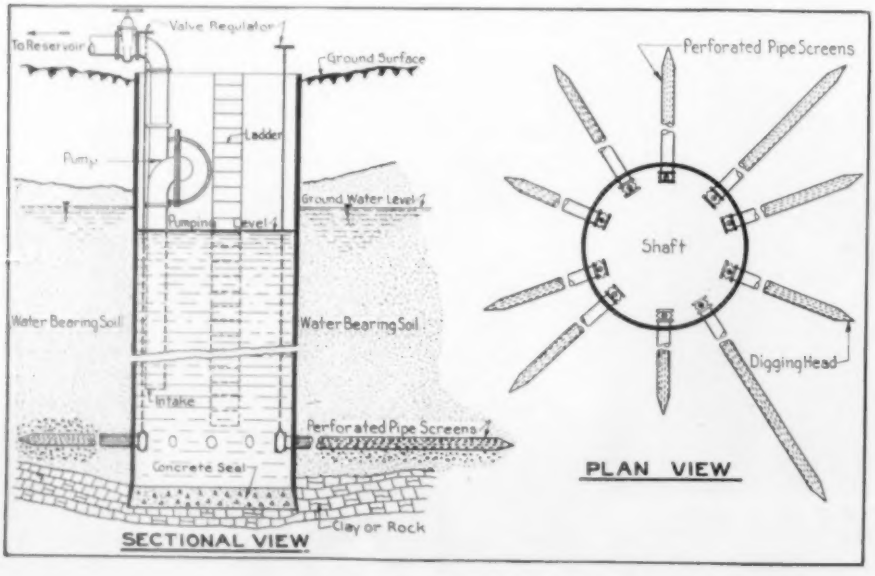
The best source of water supply to feed the new aqueduct that is being built for the city of Lisbon, Portugal, has been under investigation for years. For the first stage it was decided to draw on the underground sources in a section of the alluvial valley of the Tagus, situated 20 miles northeast of the city. No previous boring or knowledge of the ground was available. Trial borings were made, and a water-bearing bed of sand was found at a depth of approximately 90 feet. The thickness of this bed averages only 10 to 15 feet, but occasionally it increases to 30 or 35 feet. At such points it is interspersed with lenses of tough impermeable clay and is of folded formation. The overlying material, 60 to 90 feet thick, consists of marine silts and clays. The water-bearing formation consists of fine, medium and coarse sands with occasional admixtures of gravel.

On account of the folds, lenses of clay and general lack of uniformity of the water-bearing ground, the use of radiating horizontal screen pipes was not particularly suitable, the cellular type of collector being better adapted.

The Lisbon collector consists of two sections—an upper outside shell, and a lower inside cellular screen well. The upper caisson or drum is 14 feet in internal diameter and 55 feet deep and is built of reinforced concrete. The lower section is composed of twelve cells grouped around a central steel and concrete casing. These cells discharge into the central well having a diameter of 7 feet and a depth of 50 feet. There is a concrete annular-shaped seal between the two sections, and a concrete plug at the bottom of the inner casing, so that the whole installation can be unwatered.

The cells are built up of pressed steel liner plates and are 1½ or 3 feet in section and some 25 feet in effective depth. These cells are filled later with suitably graded gravel. The total exposed screen area is 900 square feet, and the area of open holes is 160 square feet. Allowance must be made, however, for obstructions of the screens by the lenses of clay.

Considerable difficulty attended the sinking of the two telescoping sections. Special measures had to be devised as the excavation proceeded for sinking the lower section so as to keep the soft upper silts and clays from settling and obstructing the screen area below. The encountering of small unsuspected and irregular masses of conglomerate and running sand, and the presence of the tracks of the Lisbon-Oporto trunk railroad 60 feet away, the settlement of which could not be permitted, further complicated the



THE TYPE OF RANNEY COLLECTOR INSTALLED FOR THE METROPOLITAN WATER BOARD OF LONDON, ENGLAND

task. The well was sunk to a depth of 100 feet. Preliminary official tests on the production of individual cells indicate a total yield of 1.5 million gallons daily per cell for the maximum drawdown. It is estimated that the twelve cells together will regularly produce over 4.0 million gallons daily, which would be 50 per cent in excess of the production guaranteed.

Field of Application

The installations in London and Lisbon demonstrate the adaptability of Ranney water collectors, certain features of which are patented, for withdrawing large quantities of underground water at one point from shallow unconsolidated water-bearing formations. The exceptionally large screen area that can be developed in a limited depth, together with the individual control and backwashing of each section of the screen, prevents incrustations and silting. The large capacity and size of the well permit the installation of large and efficient centrifugal pumping plants within the shaft, if desired. Access to all the vital parts of the collector is possible. The pumping costs are lowered because the drawdown is diminished and but one pump is needed for a single shaft which has the capacity of a large number of scattered wells which would necessarily be pumped separately.

The cost of the water extracted at London, including interest, maintenance, amortization, pumping and direct supervision, but not including general administrative charges, is 3 cents per 1,000 gallons actually delivered when the collector is operated only during the two dryest months. The cost, on the same basis, would be 1.2 cents per 1,000 gallons with continuous operation at full capacity.

At Lisbon the water is to be pumped from the collector directly into a pipe line feeding the aqueduct, which is located 110 feet above the valley floor. With electric power at 1.25 cents per kilowatt-hour, the unit cost on the same basis as in London will be 2.25 cents per 1,000 gallons delivered.

New York Advancing

Mayor LaGuardia Reports on His Stewardship

IN "New York Advancing" we find a complete picture of the accomplishments of a great city during the past two years. Mayor LaGuardia feels he has made a real experiment in municipal government. Although the ideas he has been putting into operation are not new, they have had considerable difficulty in the past in establishing themselves through their own merit above the antagonistic forces which have often been so strong in our municipal governments.

The first front of action was a definite attempt to remove politics from administration. It seems an obvious duty of the executive to select men and women who are specially qualified for the particular work for which they are chosen, but it has been learned from experience that this obvious duty is often overlooked. Commissioners for the Police and Fire Departments were chosen from the uniformed force, men who had lived with the work for years and who were thoroughly familiar with every aspect of their departments. So with all the other city departments. The policy of appointment for merit has been applied not only in the exempt offices but in the civil service. Following the raising of standards for entrance examinations, the Civil Service Commission is holding promotional examinations for higher positions.

This administration was faced with many financial difficulties. The city was bound by a banker's agreement which mortgaged its resources for at least four years; the city budget was $30,000,000 out of balance, its credit was shattered and its securities with a par value of $100 were selling as low as $76 in the open market. A great effort has been made to balance the budget and restore the city credit. It was not long before the city's improved financial condition enabled it to secure a modification of the banker's agreement, and to cut the high rate for city loans. The city departments have been carefully studied, and savings and economies have been effected wherever justifiable. New issues of bonds are carrying the lowest rates in New York's history. The city has obtained loans and grants from the Federal Government amounting to $132,000,000 and has now in course of construction a whole program of much-needed public improvements.

The new Department of Purchase is saving the city millions of dollars. A specialist on the subject of purchase has organized a department which assures the city of high quality goods and excellent values due to large-scale operation.

Relief costs have been a tremendous problem. To meet the city's share out of current revenues, a sales tax of 2 per cent in conjunction with a utility tax of 3 per cent and a gross business tax of 1/10 per cent was imposed. This, however, was only 25 per cent of the necessary amount, the state and Federal governments supplying the other 75 per cent.

Steps have been taken to aid business recovery. A free zone is being established on Staten Island, a project which not only will bring revenues to the city through rental of Staten Island piers, but is providing employment for hundreds of people. Action is being brought about for the unification of subway and elevated lines. The Department of Public Markets has been transformed from a racketeer-controlled, inefficient organization to a department vigorously aiding the honest food distributors of the city. A great World's Fair has been planned for 1939.

The city government has made great steps in the provision of aid to the underprivileged. Children are receiving more attention in schools and through child guidance bureaus. The recreation program for the city children has been greatly extended. Housing is receiving more attention than heretofore. A new City Housing Authority is active and is proud of its first project, "First Houses"; and the Federal Government is building two large projects in Williamsburg and West Harlem. The city has a new health laboratory, and 11 new hospitals are being built with the help of PWA.

The city government is making the most of new scientific methods. The latest techniques are being used in the solution of crime problems. A scientific and efficient medical examiner's office has replaced the old coroner system. New equipment has been bought and put into operation in the Sewage Disposal and Street Cleaning Departments. The Fire Department has been further modernized.

"Much remains to be done! The big tasks uncompleted ahead of us are those of transit unification, charter revision, a comprehensive construction program for low-rent housing, a municipally operated power plant, and the establishment of a municipal art center, including an opera house, a symphonic concert hall, and city auditorium. Without underestimating the difficulties, we are hopeful that we will continue to advance toward these objectives."

—Abstracted from "Administration," by Mayor LaGuardia, Chapter I of "New York Advancing." The book is obtainable from the Municipal Reference Library, or the Public Library, New York City, at 50 cents a copy.

FROM CONGESTION AND SQUALOR TO SPACIOUSNESS AND BEAUTY

Wythenshawe Rehouses More Than 6,000 Families from Manchester's Insanitary Areas

England Provides Unique Example of Satellite Garden Town Within Corporate Limits of Industrial City

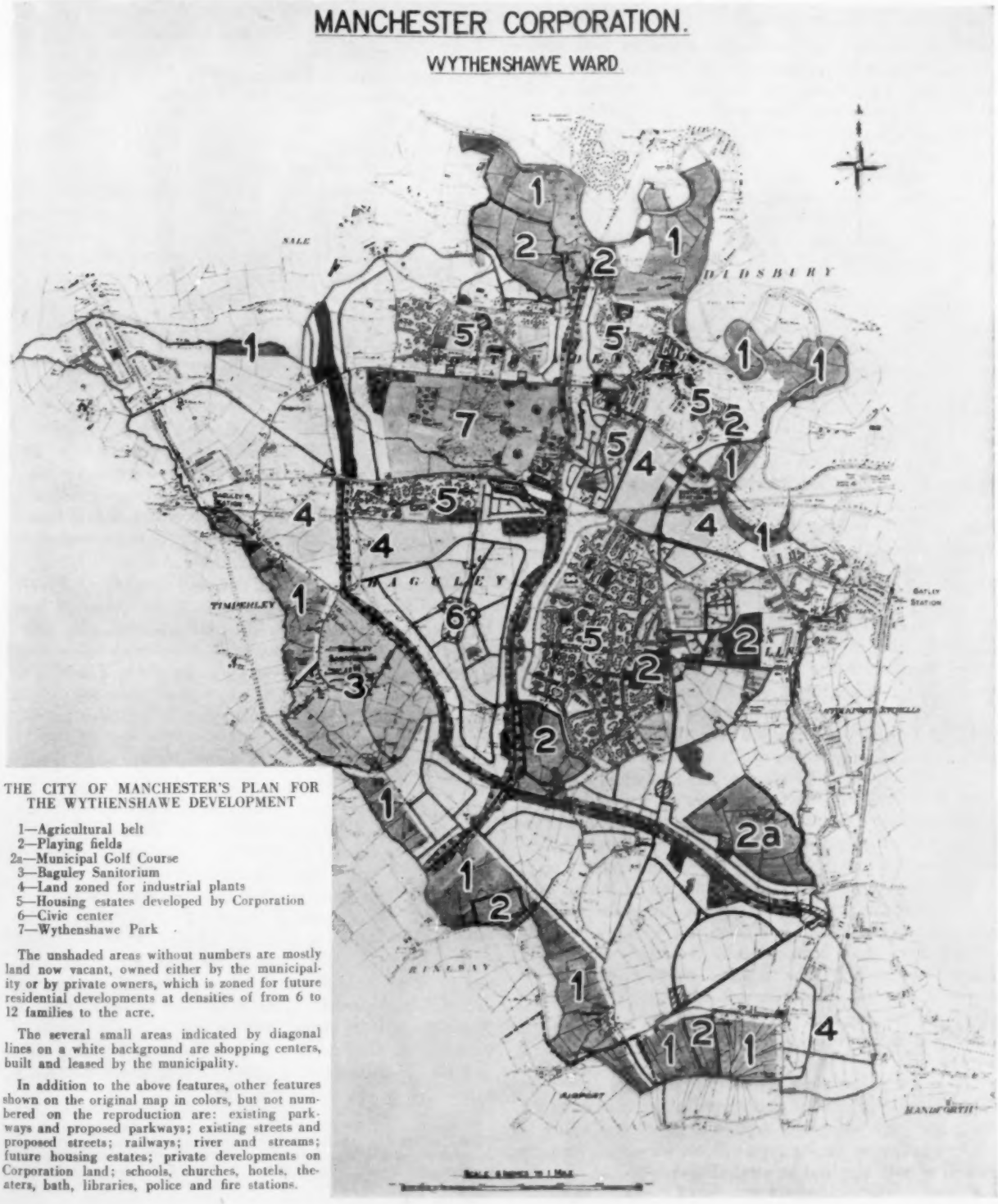
WYTHENSHAWE is unique. It is a satellite garden town within the corporate limits of a large municipality. Shortly after the war, when there was a desperate shortage of housing in England, the Housing Committee of the Manchester City Council conceived the idea of buying land on which to make a planned extension of the city. After considerable investigation by an appointed committee, attention was brought to a particularly favorable site lying south of the city across the Mersey River, a great stretch of land which had been preserved with all its wooded beauty over a 600-year period of ownership by the Tatton family. Rolling fields and copses, more than 5,000 acres, 6 miles from the city center, and with even a prevailing wind as protection against the city smoke, it was an ideal location for the building of a garden town. A recommendation for its purchase at agricultural value was immediately made to the municipal corporation. The city was brought to realize that it must extend in that direction in any case; that having the power of the landlord over its new territory would give it free rein to adopt and enforce the finest possible plan; and that with its supply of cheap credit as a municipality it could build up a successful town in quite a short time. The point was won, and the courageous deed was done.

The next step was to apply to Parliament for the inclusion of this newly acquired territory, and some adjacent

AT THE INTERSECTION OF THE WYTHENSHAWE PARKWAYS

tracts of privately owned land, within the boundary of Manchester. But rural interests protested against the threatened invasion, and Parliament refused. Manchester then tried to develop the territory through its local authority, the Bucklow Rural District Council, but without city credit the primary cost of the main drainage system was enough to choke its efforts. In 1930 another vigorous effort was made for incorporation, and this time victory was achieved. Now the city held responsibility for the estate as both landlord and local authority. Trouble was not quite ended, however, for the power of compulsory purchase was denied the municipality when it felt the necessity of buying a number of plots contiguous to those already acquired. Purchase finally had to be made at a higher price.

Soon after acquisition, one of England's leading town planners, Barry Parker, was put in charge of planning the area. His first move was to establish a permanent agri-



THE CITY OF MANCHESTER'S PLAN FOR THE WYTHENSHAWE DEVELOPMENT

1—Agricultural belt
2—Playing fields
2a—Municipal Golf Course
3—Baguley Sanitorium
4—Land zoned for industrial plants
5—Housing estates developed by Corporation
6—Civic center
7—Wythenshawe Park

The unshaded areas without numbers are mostly land now vacant, owned either by the municipality or by private owners, which is zoned for future residential developments at densities of from 6 to 12 families to the acre.

The several small areas indicated by diagonal lines on a white background are shopping centers, built and leased by the municipality.

In addition to the above features, other features shown on the original map in colors, but not numbered on the reproduction are: existing parkways and proposed parkways; existing streets and proposed streets; railways; river and streams; future housing estates; private developments on Corporation land; schools, churches, hotels, theaters, bath, libraries, police and fire stations.

cultural belt of 1,000 acres. Then scattered open spaces were carefully chosen, comprising another 1,000 acres. Room for every conceivable outdoor recreation can be had; even a 100-acre golf course is to be provided. The ancestral park of the Tattons, presented by Sir Ernest and Lady Simon because of their active interest in Wythenshawe, is a great asset to the community. It contains 250 acres of green lawn and beautiful old trees, and in its midst stands the old-world Wythenshawe Hall with its paneled rooms containing many original art objects. It is now used as a museum and a tea house.

Mr. Parker had been won by the idea of New York's Westchester County parkways. Two such parkways with an average right-of-way of 300 feet will eventually run through Wythenshawe, one of them now partially completed. Down either side runs a strip of planting, and the road itself is designed as a speedway. The houses overlooking the parkway are set back of this strip, without direct access to the main highway, but with a subsidiary roadway behind them to care for their local traffic. These houses are particularly desirable because of their permanent open outlook and their proximity to the speedway. In connection with the speedway, the accessibility of Wythenshawe by other means of transportation should be made clear. There are three railroad stations in the area and one just outside. A bus service passes through the estate in both southerly and easterly directions. And as the town grows beyond this service, the municipal corporation will establish its own complete system of motor-bus transport.

The traffic circle idea was adopted by Mr. Parker. The important crossings are treated in this manner. Actually they have proved a little too small in their original design for the increasing volume of traffic in Wythenshawe.

Types and Rents of Houses

For housing, 3,000 acres were allotted and placed under the supervision of the Housing Department of the city of Manchester, which has since been responsible for the designs of the housing layout and the houses themselves. To date 6,013 houses have been erected by the city on this estate at a density of 12 to the acre. When taken over by Manchester, the population of the area was approximately 7,000. The limit of growth for the community will be reached at 25,000 houses, accommodating a population of approximately 100,000 persons. The present municipal housing is composed of flats, cottages, and cottage-flats. All are in brick of the two-story type, semi-detached or in rows of three, four or six houses. They range in size from the one-bedroom, non-parlor type to the four-bedroom, parlor type. The parlor is a room in addition to a living room. Some have baths upstairs and some downstairs, with a resulting difference in price. All are heated by the inevitable English coal stove and fireplaces, usually combining the heating and the cooking in the scullery. Hot water is also supplied by individual coal fires. Rents in these houses range from 7/3 to 15/9, or approximately $1.80 to $3.95 per week, including electricity and rates (local taxes). The first figure applies, of course, to the single-bedroom, non-parlor type, and the second figure to the four-bedroom, parlor type. Rents vary with location as well as with size and accommodation.

The American visitor is glad to find a bathroom in every house in the Wythenshawe development, but surprised at the absence of garages. This lack of facilities for private automobiles is no oversight, however.*

Tenants Respond Admirably to New Environment

During an inspection of Wythenshawe in September, 1936, the Editor of THE AMERICAN CITY was much impressed with the beauty of the entire development and with the fine upkeep of the front and rear gardens with which all of the cottages are supplied. The interest of the residents is stimulated and maintained by a town gardener who makes inspection and gives advice and instruction to all who are interested.

Inquiry as to the response of the tenants to their new surroundings brought an enthusiastic response from Housing Director Leonard Heywood. It is Mr. Heywood's estimate that 80 per cent of the families moved to these new homes from the slums of Manchester become satisfactory tenants almost over night. About 15 per cent more respond to new environment, but require a considerable period of education and supervision before their premises are maintained in conformity with the standards of the new community; while about 5 per cent prove incorrigible and drift back to the slums and their former way of living. From a comparative height and weight study by the school medical officer, there is an indication that the children of Wythenshawe have gained from their new environment a general improvement in health. Also it is to be noted that the infant mortality rate is 10 per 1,000 lower in the Manchester Corporation Housing Estates, of course including Wythenshawe, than in the city as a whole, and is almost exactly half that of the exceptionally bad slum sections designated as "clearance areas."

In addition to municipal housing, to provide a well-balanced community, private builders are urged to lease land from the corporation for their own building enterprises for the higher income groups. All private building, however, is carefully supervised by the city architect so as to fit properly into the community. To date, 952 houses have been built by private enterprise at densities varying from 4 to 12 to the acre.

In the Wythenshawe plan sites were reserved for a civic center, for schools, for churches, for shopping, and for industry. There are four schools now, and three more are planned. The shopping districts are located in such a manner as to create "neighborhood units" three-fourths of a mile apart. After some discussion, they were located for the most part at street corners, but were set back and provided with special parking spaces. To date there are nine light industries, heavy, smoking industry being prohibited.

In concluding a discussion of the plan, Mr. Parker's interest in hexagonal rather than rectangular planning should be mentioned. It has been used to some extent at Wythenshawe, its virtue being a saving in the length of road affording access to a given number of building sites, and also entailing obtuse street corners which provide a better sight range to the motorist.

* The reason for the lack of garages or even room for a garage is explained by the fact that houses built under the various housing acts were provided for working-class people who otherwise would not have been able to afford good housing accommodation. It is the English point of view that if a man can afford to run a motor car he does not require to live in a subsidized house.

The Financial Picture

The financial picture is as follows (the figures being from the City Treasurer's report as of March 31, 1936, with sterling translated into dollars at $5 to the pound):

1. Cost of acquiring land at Wythenshawe for the Wythenshawe Estate	$1,678,245
2. Cost of streets and sewers provided by the Wythenshawe Estate Committee in residential areas	1,882,060
(The cost of improving existing highways and of constructing the arterial roads falls upon the local authority, not the Estate Committee, and is excluded here)	
3. Cost of shopping centers	453,925
4. Cost of municipal housing estates at Wythenshawe	9,240,545

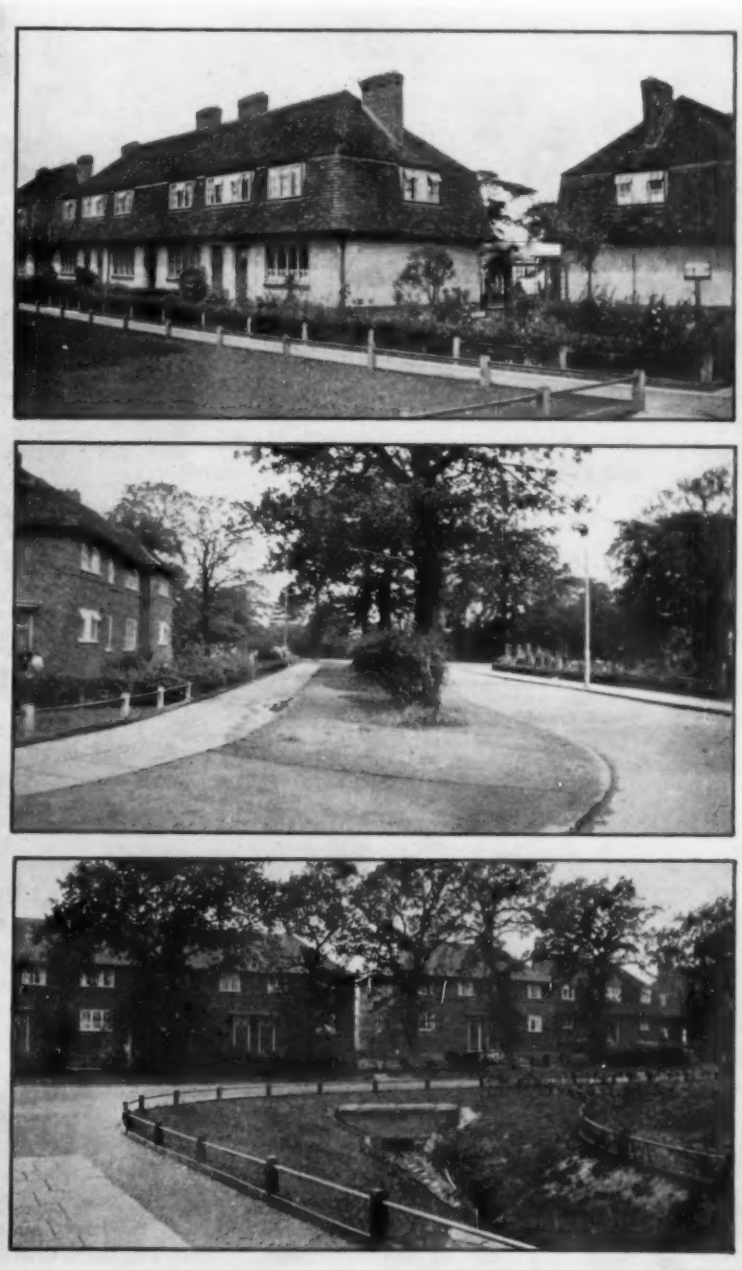
All the foregoing expenditures have been defrayed out of moneys raised on loan by the city. Items 1, 2 and 3 above are not subsidized; item 4 is subsidized on revenue account by annual subsidies of $18.75 per house for 40 years from the Corporation (the city of Manchester) and $23.50 per house, or $11.25 per person rehoused, from the National Government, according to whether the house was provided to reduce the housing shortage or to provide rehousing accommodation for slum clearances.

Benefits from City-Owned Land

A final consideration of Wythenshawe should analyze those factors which have contributed to its success in order to take them into account in future planning. Enthusiasts feel that the satellite garden town has easily won over the garden city. The two great drawbacks of the garden city are its inability to get cheap credit easily, and its difficulties in transplanting population and industry. The satellite garden town, within or near the city's boundary, gets the necessary credit through its sponsorship by a large municipality, and easily draws suburban population because of its desirability as a place to live in. The local authority is in a fine position to provide the initial improvements, and building is quite an ordinary undertaking to the English city of today. No private company would ordinarily have the confidence or the resources to attempt a development on such a grand scale.

The ownership of the land by the city is perhaps the most significant aspect of the satellite garden town. In Wythenshawe, Manchester now owns 3,710 acres out of a total 5,507 acres. Some persons have thought the city extravagant in buying so much land. But Manchester saw it otherwise. In the first place, it was easy for the municipality to see that it needed more housing and therefore more land to place it on. In the second place, it bought most of the land at agricultural value, a calculated saving of about $1,500 an acre over city land. In the third place, the city's powers as landlord were sufficient to bring about the actual execution of an excellent town plan which will forever protect Wythenshawe from the blight and deterioration which threatens so many of our housing areas from the time of erection. In the fourth place, the municipality conserves for itself the future increment in land values—a rational saving which few cities have had the foresight or courage to make.

The cities of the United States and of other countries can learn much from Wythenshawe.



THREE GLIMPSES OF THE WYTHENSHAWE DEVELOPMENT
Homes and surroundings of Manchester's former slum residents

The Newark Fire Department—Man-Power, Methods and Equipment

By MICHAEL P. DUFFY
Director, Public Safety, Newark, N. J.

THE Newark Fire Department was organized January 16, 1797, with one company and a small hand engine; but its voluntary personnel included members of many of the city's most prominent citizens. Today it is a splendidly equipped institution, with its fire stations, repair shop, telegraph system, apparatus and equipment valued at $2,462,142 and with an A-1 rating by the National Board of Fire Underwriters.

A full-paid department was established in 1889; in 1907 the present central fire-alarm system was completed; 1911 saw the installation of the first motorized fire-fighting unit, a combination pumping, chemical engine and hose car, and the two-platoon system was inaugurated in 1917. The Department protects from fire 450,000 persons and property assessed at $1,024,418,853.

Present Strength

We have at present 29 engine companies, 12 hook-and-ladder companies, a chemical company, a water-tower company, a fire-boat company, and a searchlight company; and the uniformed force consists of 12 chiefs, 90 captains and 600 firemen, totaling 702.

In service are 36 pumping engines, hose cars and boosters, 12 combination chemical and hose cars, 15 aerial hook and ladder trucks, 2 water towers, 1 chemical car, 1 searchlight car, 1 60-foot steel hull fire-boat, 8 chiefs' cars, and 17 other pieces of apparatus, including a wrecker and a fuel and supply car.

The fire-boat is equipped with two 1,300-gallon-per-minute pumps. Protecting property along the Passaic River and Newark Bay, it has been responsible for reduced insurance rates.

1936 *Budget Cut*

The efficiency of the Department is perhaps best illustrated by the record of Newark's fire losses since 1925, when they amounted to $3,350,311, with a steady decline to $748,877 in 1935, in which year the Department responded to 3,506 alarms of fire. This record has been accomplished notwithstanding the decreased annual budget of the Fire Department during the depression years.

Fire-Alarm System

The fire-alarm telegraph system is often referred to as the mainspring of the works of a fire department. Newark's Gamewell system is of the manual type. Essentially, the difference between the automatic and the manual type of system is that in an automatic office, when the box is pulled, the alarm is transmitted directly to the fire stations. In the manual office, the alarm is received in the central office and then transmitted to the different fire stations. When an alarm of fire is turned in from a fire-box, a bull's-eye in the central office is illuminated, a bell strikes the number of the box, and a register records the alarm and prints the year, month, day, hour and minute the box was pulled.

The operators then set up the box on a transmitter by means of dials; the number of the box is verified from the record as printed by the register, and the transmitter is started. Mechanically, the alarm is transmitted two times to the various stations.

Phantom Boxes to Be Replaced

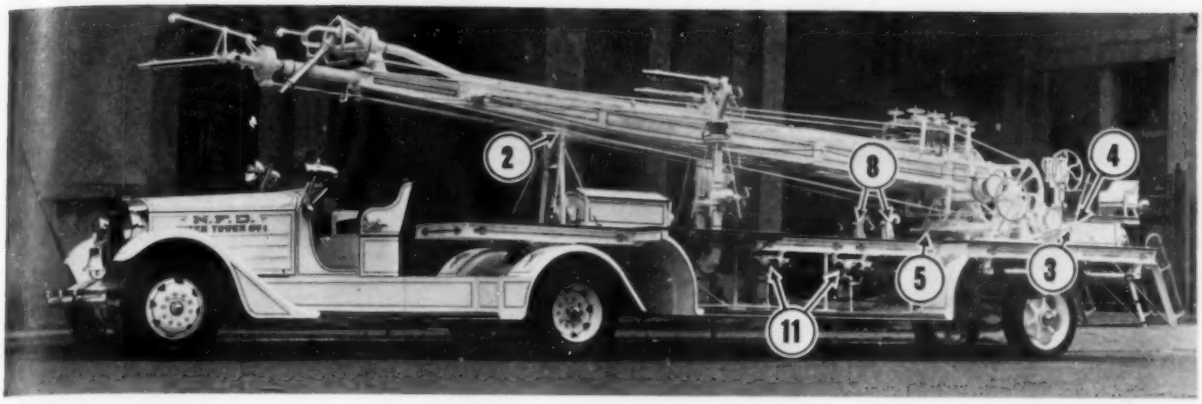
We have 488 street boxes, 155 private industrial, 70 private institutional, and 326 phantom boxes. Strategic points throughout the city have been chosen as phantom box locations, assigned box numbers and included in the Fire Department's running schedule. In the event of a telephone alarm of fire, the phantom box number nearest to the fire is transmitted over the telegraph system in a manner identical to the transmission of a regular fire-box alarm. It is estimated that within ten years every phantom box will be replaced by an actual fire-box.

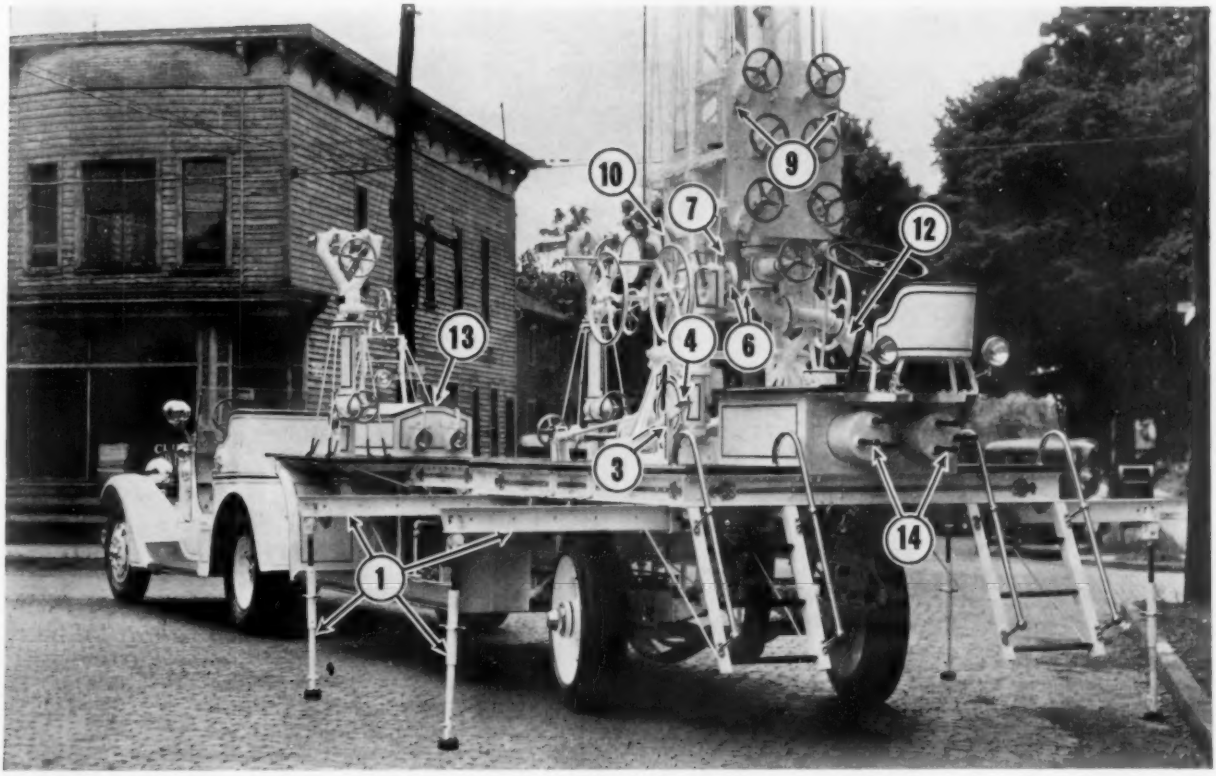
All repairs of fire-alarm apparatus, including gongs, boxes and instruments, are made in the telegraph repair shop. Boxes, if seriously damaged or burned out, are rebuilt. The telegraph department also does all its own construction work, both underground and aerial. Two operators are always on duty, and at least two linemen are ready to make necessary repairs to breaks or grounds on the circuits, no matter what hour of the day or night. Constant tests and inspections are made to insure the proper working of the instruments and the system as a whole.

Prevention

At one time the sole reason for the existence of a fire department was the extinguishment of fires, but the American people have learned that fire prevention is imperative to diminishing fire loss. No fire department lacking a fire prevention bureau can be classed as modern. The immense value of service rendered by Newark's Bureau of Combustibles and Fire Risks, with city-wide inspections, is fully attested by the reduction of fire hazards in this city, and the commendation accorded it by the insurance companies.

Newark conducts both a Fire College for its officers and a Training School in which firemen are drilled in the fundamentals of fire fighting and taught to be as skillful in their work as men engaged in professions and trades. Discipline, so essential to the successful management of large bodies of men, is emphasized here and its rules ap-





NEWARK'S AMERICAN-LaFRANCE NIAGARA TYPE 12-CYLINDER WATER TOWER WITH 65-FOOT MAST AND TWO TURRETS—HOW IT OPERATES

The tower starts out and arrives at the fire in the locked-down position shown in the top photograph. At the scene, the first move is to extend the side-frame jacks (1), which broadens the base as much as 6 feet on each side. Then, to raise the mast, first release the mast bed lock (2) by means of a pull cable attached to a hand lever; remove safety pin (3) from the trip mechanism; stepping on the trip pedal (4) releases the cross-head hook (5), which allows the springs to take action, raising the mast to a vertical position. The speed of the mast can be controlled by a hand brake and lever (6) so that the mast will ease into the stops without excessive jolting and locked there by the raising mechanism locks (7). The crosshead locks (8) are then applied to prevent the tower from falling back to a down position when pressure is applied to the mast pipes when these are operating over the back of the tower, as safety in case the raising locks were not applied when raising. At this point, with the mast up, step to the panel carrying the six wheels. The top pair of wheels raise or lower the main mast pipe which is held in position by two locks whose handles (9) are under these wheels. The middle wheels revolve the pipes—the left wheel revolves the mast pipe 360 degrees; the right wheel revolves the duplex pipe (lower pipe) 270 degrees. The lowest pair of wheels raise or lower the duplex nozzle. A valve directly under the panel controls the water into the duplex pipe.

To raise the extension mast, raise the locks on the uppermost wheels, which will allow the mast-pipe controlling cables to extend with the mast. The mast is cranked up by two wheels, one on either side, which are connected to cable drums on a cross shaft attached by a double-reduction gear. The mast can be locked in any position by a ratchet lock (10). Either pipe is placed in correct position by the panel-board wheels.

Now for the water. Connect hose lines to the 12 receivers (11) connected to a common discharge manifold supplying main mast and deck guns. The duplex pipe has an independent receiver (12) handling three lines of hose. Each deck pipe and mast pipe has a gage at the base registering water pressure, which averages 160 pounds. In the box (13) are 1½- to 2½-inch nozzles for all pipes. Adjusting bolts (14) are provided for increasing spring tension as time passes to 20 years.

The main mast, 65 feet high, with 100 pounds nozzle pressure throws a 210-foot stream, and has a capacity of 2,000 gallons per minute. The duplex pipe rates 1,500 gallons. The deck pipes are 3,000 gallons each.

THE H-H INHALATOR BEING USED IN CONNECTION WITH THE SCHAEFER METHOD OF ARTIFICIAL RESPIRATION; NOTE BELOW WHAT THESE SQUADS CARRY

Mine Safety Appliance Co. half-hour oxygen breathing apparatus, two-hour McCaa oxygen breathing apparatus, H-H Inhalators with auxiliary attachments for treating two patients at one time, all-service masks, Wolf safety lamps for showing an oxygen deficiency, and M.S.A. type "D" first aid kits. In addition to this equipment there are complete rubber suits for ammonia leaks and such incidentals as hot pads, rubber gloves and anatomical charts for instruction. This equipment has been supplied to both the Police Emergency Squad and the Fire Department Rescue Squad. This same type complete equipment is used in Newark's Police and Fire Academy for training police and firemen of the entire city

plied throughout the Department. The standard of efficiency is constantly being raised.

The Department maintains a repair shop, equipped with the most modern machinery, for maintaining at the highest efficiency its buildings, apparatus, implements and equipment. The shop's work ranges from minor repairs to complete rebuilding of apparatus and pumping units. All fire-hose in the Department is tested annually at 250 pounds pressure, and defective lengths are replaced by new hose.

New Rescue Equipment

The fire-fighting, rescue and life-saving equipment of the Department has been augmented and brought to peak efficiency by purchase of the following implements during the last year:

Sixty Burrell all-service masks with speaking diaphragms, seven of which are officers' masks with white pieces to distinguish them at fires (an innovation in the Department); 3 Wolf Flame safety lamps to detect lack of oxygen; an H-H Inhalator for resuscitation work; 55 CO_2 extinguishers; a new Browder life-net; 11 3-way deluge sets; 16 Porter bolt clippers; 20 Foam extinguishers and 6 one-quart Pyrene extinguishers. In addition, 24 Burrell all-service masks have been equipped with speaking diaphragms and put in first-class condition, and the canvases of four life-nets have been replaced. This has been the greatest program of equipping the fire division with such fire-fighting and life-saving equipment since its inception.

The Department's supply of first-grade fire-hose has been increased through the purchase of 12,250 feet. Rubber and asbestos suits for the five battalion districts have been purchased, and additional fire-fighting and life-saving equipment will be purchased from time to time as the money is available. Furthermore, we are continually on the alert for new and better ideas to provide for the safety of the people in the city of Newark.

With the purpose of maintaining the Department's rolling stock at the highest possible standard, we recently purchased four of the most modern pieces of apparatus, painted white so that they can be seen more clearly at night. One is a pumping engine of 1,500-gpm with a 12-cylinder motor; the second is an 8-cylinder motor, combination hose and booster, carrying 1,200 feet of 2½-inch fire-hose and equipped with a pump to deliver 100 gallons of water per minute; the third is an 85-foot, 12-cylinder, double-bank aerial hook and ladder truck with which it is possible to make a complete circle of the ladder; and the fourth is a 12-cylinder water tower, with 65-foot mast and two turrets, as illustrated here.

In view of what has been accomplished in the Fire Department during the past few years, I can say, without fear of contradiction, that the money expended by the citizens of Newark for its maintenance and operation results in dollar for dollar value, at the same time providing the fighting force with every conceivable means for its safety and efficiency in fire-fighting activities.

Eternal vigilance is the price of safety: we translate eternal vigilance into enough modern fire apparatus and trained men.

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THE AMERICAN CITY

Primary Treatment of Sewage and Food Products Wastes

Battle Creek, Mich., Has a Compact Plant with Many Unusual Features of Design

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

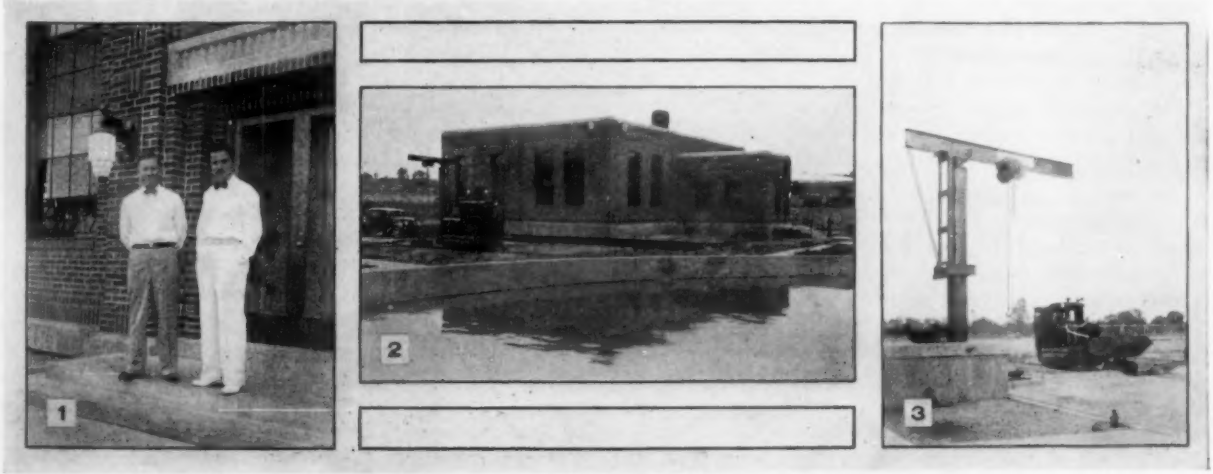
THE home of several nationally advertised and used food products, Battle Creek, Mich., has recently placed in operation a new and unusually well-designed sewage-treatment plant with primary treatment and separate sludge digestion. The city has a population of 44,000, but the plant is designed for a population of 60,000 and a maximum daily flow of sewage of 19 mg. The average dry-weather flow to date has been 6.6 mg. The city has sanitary sewers with a few storm connections, which are gradually being eliminated by the construction of new storm sewers.

The flow of sewage to the new plant is by gravity except for about 1 mgd which is pumped to the 54-inch reinforced concrete interceptor. There are five siphon crossings of the river inside the city limits, using eleven cast iron lines varying from 8 to 30 inches diameter. A sluice-gate at the entrance to the plant can be used to isolate the plant entirely, permitting the untreated sewage to flow through a by-pass direct to the Kalamazoo River. The sewage enters the main building through a 3-inch coarse bar screen, which is hand cleaned. The screenings are drained, bottles and metal are removed, and are either put back into the flow of sewage or buried. Adjacent to the screens is a scum tank, to which the scum from the scum troughs of both clarifiers is pumped. This tank can be skimmed and the grease dried and burned, or pumped direct to the digester. An ash hoist permits easy lifting of the grease in buckets to the ground level.

Two gates control the flow of sewage to either of the two compartments of the wet wall. From one compartment it may be pumped by electric-driven pumps, and from the other by sewage-gas powered pumps. Two General Electric float switches control the operation of the pumps. The 7-mgd electric pump is used most of the time, and the 4-mgd pump is cut in if extra pumping is needed. It is intended to use the gas-engine-driven pump most of the time as soon as a sufficient volume of gas is developed. The plant was only placed in operation in April, 1936. The electric pumps will then be used when the flow exceeds the 8-mgd capacity of the gas-driven pump.

The pumping equipment includes: a 7-mgd and a 4-mgd Economy pump with 40- and 20-hp Howell electric motors respectively; and the 8-mgd Economy pump driven by a LeRoi 4-cylinder digester-gas engine equipped with oil and air filters, a self-starter connected with the float in the wet well, a generator and a magneto, and furnishing 45 hp to the pump through a herringbone drive. Each of the pumps has a Western Gas Construction Co. gate-valve on the influent and discharge side, and a check valve on the discharge. Normally the pumps are self-priming from the wet wells, but two priming vacuum pumps are also provided on the workroom floor.

Located in the basement also are two Chicago Scru pumps for handling sludge. They are powered with 2-hp



THE BATTLE CREEK, MICH., SEWAGE-TREATMENT WORKS

1. H. P. Jones, Consulting Engineer, and N. G. Damoose, Superintendent in charge of the plant, standing at entrance to main building. 2. The main building, seen from one of the clarifiers, and showing the equipment for handling the 1-ton chlorine containers, the industrial locomotive for hauling grit and sludge, and, at the extreme right, the secondary digester. 3. Close-up of the pillar hoist for chlorine containers, and the locomotive and a car of grit

Howell motors and deliver 50 gpm through a 2-inch pipe against an 18-foot head. A battery of thirteen valves permits the largest possible number of pumping operations with these two pumps. Every valve here, as all through the plant, is numbered, and each operator has a set of mimeographed charts and instructions at his home. Three sets are mounted, framed and covered with glass, and hung at strategic points about the plant, so there is no reason ever to make a mistake in the use of any one or more valves. A Simplex recording venturi meter on the raw sludge line keeps this information ready for reports or research work.

There is provision in the basement for a future installation of another gas-driven pump should it be desirable. The drainage of the plant is taken care of by a Chicago sump pump with a 3-hp Howell motor. It can be used for unwatering the wet well if occasion requires. A 5-ton overhead traveling crane made by the Chisholm-Moore Hoist Co. provides means of handling the machinery in case of repairs or replacement.

The Workroom Floor

On the workroom floor, or mezzanine, immediately above the basement and opening onto it so that the entire basement can be seen from the workroom, are two Nash Hytor vacuum pumps which carry a 19-inch vacuum on the sewage-lift pumps. Here also is the entire electrical control of all plant mechanisms through a power distributing panel.

The sewage works are located beyond the limits of the city water supply mains, and so provision had to be made for an adequate water supply for all purposes. Two 105-foot wells 6 inches in diameter with Cook pumps deliver water to a pressure system in which 80 pounds is maintained by means of a Saylor-Beall air-compressor driven by a 1/3-hp G-E motor.

The boiler room is also located on this floor and contains a Petro oil burner in a National boiler, connected to the digester coils and to all the buildings. An American Radiator Co. Ideal gas-fired boiler next to this has the same connections. In addition to these heating facilities there is an American Gas Products hot water heater for lavatory use. A 2-inch Trident meter measures the water circulated to the digester coils by two Wesco 2-inch circulating pumps driven by 1/3-hp Century motors.

On the workroom floor are an emery wheel, a steel table for machinists, a Black & Decker steel drill, and a power hack-saw, while on the ground floor a complete Linde-Oxweld welding outfit on a hand truck provides means for making repairs to equipment in fast time.

On the ground floor overlooking the workroom floor and the basement is the Simplex recording venturi meter chart on the low-lift pump discharge line. On this floor also is the fully equipped laboratory, in which all standard sewage analyses and research work can be carried on. In conjunction with the program of research there is a river gaging station with an automatic recording mechanism, so that the stream flow is known at all times, as is the flow of sewage to the stream. Beneath the laboratory table on one side of the room a large trunk carries a complete M-S-A outfit of a pair of fresh-air masks for two men, and 75 feet of hose, so that two men could go into a room filled with chlorine or sewage digester gas and work in safety while a third man, operating the fresh-air pump, would be away from any danger.

To save the cost of an extra piece of equipment in the laboratory, the incubator for B.O.D. determinations is installed in the bottom of the electric refrigerator. The refrigerator is large enough to contain the bottles for the influent and effluent samples which accumulate during the 24 hours. Further, the plant is so compact that a man has to carry a sample only a short distance before it can be placed in the composite bottle.

On the same floor are the office and the lavatory, the latter fully equipped with hot and cold water and shower-bath. On the side of the plant away from the laboratory and toward the screen house is the chlorine room, which is deserving of particular attention. One-ton containers of chlorine are delivered to the plant by truck and unloaded to the inside of two pairs of track on which the containers will roll easily. The outer track is for the storage of empty containers. A Chisholm-Morse pillar hoist handles the containers from the truck to storage, and also from storage to the four-wheeled dolly which runs on a track from the outer platform into the chlorine room. The rails run between the two 4,500-pound Toledo springless scales, and the containers are unloaded onto the scales by rolling over a pair of I-beams set in clips made of short sections of angles mounted on concrete blocks. There is a single header with connections to either side to the two Wallace & Tiernan 360-pound capacity chlorinators, and the one 720-pound machine.

For the protection of the operators where such a large amount of chlorine will be in use at one time, a 15-inch fan is set in the outer wall at the bottom, flush with the floor, with the control of the fan from a switch outside the door from the balcony or ground floor inside the building. Thus, if a container breaks loose and the room is filled with the gas, a man discovering it can shut the door, start the fan and exhaust the entire container of gas through to the outer air before anyone is required to enter the room. If it is desired to attempt to shut off the container, the M-S-A outfit can be used.

The Screen Building

Just across a set of industrial railway tracks from the main building is the screen building. Here there is space for the parking of the Dodge truck with steel body and Wood hydraulic hoist for hauling dried sludge. The truck has a 2-cubic-yard body on a 1½-ton chassis. In the venturi vault between the operating building and the screen building there is provision for pre-chlorination at the outlet end of the venturi tube when needed.

In the screen building are two Chicago Pump Co. comminutors with ⅜-inch slots and a capacity of 12-mgd each. Each is powered with a 3-hp Howell motor and has a Universal gear reduction. They are float-controlled, requiring a 6-inch head for starting. The comminutors are run alternately, the shift being made on Fridays.

Provision is made for by-passing the comminutors direct to the fine bar screen, which has ¾-inch openings. The sewage then flows to the Dorr Detritor, which is 24 feet square, and the rotating mechanism makes one revolution in four minutes. The cleaning mechanism pulls up the collected material, which has consisted largely of waste material from food products factories, and dumps it into one of the industrial railway cars beneath the delivery end. The material is either spread on low ground to dry and then burned or is buried. A small screw pump takes the

washings from the grit brought up by the Detritor and delivers them back into the sewage flow.

From the Detritor the sewage flows to the distributing manhole, where it separates into two streams to the two Dorr Sifeed clarifiers, which are 80 feet in diameter and 10 feet deep at the sides, with a pitch of 1 inch in 12 to the center. The effluents from the clarifiers flow to a common flume, where they are chlorinated at the rate of 18 to 22 ppm. The plant was placed in operation on April 23, 1936, and within two months people visiting the plant out of curiosity and of their own volition said that the river was clear above the plant for the first time in 40 years. Prior to the installation of this plant the sewage received no treatment and was delivered to the river from the nearest street. A new real estate development started along the shores of the river within three months of the opening of the plant, in a section previously ignored by real estate operators.

The Digesters

On the side of the main building opposite to the screen building are the two digesters. Between them in the control chamber is the master Emco gas meter, with a 4-inch PFT flame trap on each side. The gas meters for measuring the amount of gas used for the gas-fired boiler and for the gas engine are located in the boiler room in the main building. An exhaust fan in the control chamber prevents the accumulation of gases in that place by exhausting them rapidly as soon as discovered. A series of taps on the lines in the control room permit sampling the sludge at any point and in any condition in the storage digester.

The sludge is pumped direct to the primary digester, which is 45 feet in diameter and 25 feet 6 inches sidewater depth. This digester has two Dorr Turbo-mixers and a Dorr floating cover. Sludge is withdrawn through an inverted siphon to the secondary or storage digester, which is 60 feet diameter and 22 feet sidewater depth. It is possible to unload sludge from either digester to the other by gravity or pumping. An automatic vacuum relief valve and a blow-off valve on the top of the primary digester assure safe operation. The secondary digester is similarly equipped.

The domes of the two digesters are interconnected for gas pressure equilibrium. Gas is taken off by a 3-inch gas line leading through the master meter to the two gas purifiers, which are cylindrical steel tanks filled with wood shavings saturated with ferric chloride to remove the hydrogen sulphide in the gas.

Sludge Beds

There are twelve sludge beds, each 25 x 100 feet and divided from each other by concrete posts and slabs. The beds are laid out in two groups of six, so that clustered valves, four in a group, serve the beds. The sludge is removed by hand and hauled by a Midwest 7-ton gas locomotive in six side-dump sludge cars to an unloading ramp built onto the protective backfill around the secondary digester. From this elevation the sludge can be dumped into any truck or other conveyance which is to haul it away for disposal or for use as humus or fertilizer.

All drainage from the gas line valve chamber, the digesters, control chamber, and even the pavement drainage, flows to the drainage sump in the main building. The waste gas is consumed in an attractive waste-gas burner in front of the main building. Near the screen building is a small brick structure housing the water pumps and power intake for the plant.

This plant was designed for the city of Battle Creek by H. P. Jones & Company, consulting engineers of Toledo, Ohio, and is operated by Naseeb G. Damoose as Superintendent. Mr. Damoose was formerly associated with the operation and research work at the Grand Rapids, Mich., sewage-treatment plant.

Emergency Water Supply for an Added 25,000 Met Army Need at Fort Knox, Kentucky

FORT KNOX, located only 30 miles from Louisville, has been in the public eye of late, for it is the site of the new Federal gold-storage vault. This past summer it was the scene of major army maneuvers, sham battles and artillery practice. Normally, the army population of Fort Knox is about 3,000 men. During the maneuvers, however, a peace-time mobilization brought 25,000 additional troops to the reservation.

Napoleon, Caesar—or perhaps it was Alexander the Great—said that an army travels on its stomach, but if you will ask the water-supply men who served the army during the World War both in the United States and in Europe, you will learn that it is equally true that troops need water to wash down rations as well as for cleanliness. Fort Knox lacked enough water for the augmented population. The scarcity was so great that the soldiers were permitted only one bath a week—back to the Saturday night standard.

Army engineers found a large clear spring about four miles from camp which could supply the additional water needed. A 70-horsepower Caterpillar diesel engine was rented from the Roy C. Whayne Supply Co., of Louisville, and set up under a tree at the side of the spring and connected by a flat belt to a 3-stage 6 x 8-inch centrifugal pump operating at 1,200 rpm. A 16-inch pipe line was quickly laid to the camp and the engine started. After that every day was bath day. The diesel-powered pump delivered 720,000 gallons of water a day to the camp, with a static head of 232 feet and a total head of 320 feet.

Analysis of the spring showed the water suitable for all requirements. No filter facilities were available, but as a precaution the water was chlorinated. The engine, according to the distributor, was the ninth diesel manufactured by the Caterpillar Tractor Co. and had been in service for four and a half years prior to its rental by the Army.

The Plan of Goiania

A New Capital City Under Construction in Brazil

GOYAZ is one of the big central states of Brazil. In one of its most picturesque regions converge three of the largest river valleys of South America—the Amazon, Sao Francisco and Paraná. Its climate is, in general, healthful and temperate, due in a large measure to the elevation of most of its territory. This fact, coupled with the natural charms and riches of the region, has been the reason for its selection as the site of the future capital of Brazil.* Moreover, Goyaz as a whole, owing to its fertile territory, agreeable climate and natural geographic conditions, will in all probability become one of the richest states of the nation.

The present state government, headed by Dr. Ludovico Teixeira, resolved to move the ancient capital of Goyaz, which was in an unsuitable location, to the present site. Before the law was enacted, Dr. Armando de Godoy, city planner, who twice visited the United States to study urban development, was commissioned to inspect the conditions of the locality, having presented a favorable report to the state government.

* The site of the future Federal Capital of Brazil, which has been under consideration ever since the Republic was proclaimed, and which has now been definitely provided for in the new Constitution, is also to be on the central plateau of Goyaz.

PLAN OF THE SOUTHERN SECTION OF GOIANIA

THE PROPOSED CENTRAL PLAZA AND CIVIC CENTER OF GOIANIA

As the government of Goyaz wanted to begin the work at once, and as Dr. Godoy was then otherwise occupied, the planning of the northern section of the city was intrusted to another Brazilian city planner, Ottilio Correia Lima. Later, Dr. Godoy, who for years has been Chief of the City Planning Department of Rio de Janeiro, was commissioned by Governor Teixeira to revise the previous work and complete the plan. In this he was assisted by Werner Sonnerberg, engineer, and Salvador Batalha, architect, who executed the plans of the public buildings.

When Dr. Godoy was in New York, he was aided in his researches by the editor of THE AMERICAN CITY, who also suggested that he visit some of the planned American cities. One of these was Radburn, New Jersey. Impressed by what he saw there, Dr. Godoy has applied some of its salient features in developing the plans for the new city of Goiania.

As shown by the accompanying plan of the southern portion of the city, the municipal and federal public buildings have been grouped about a large central plaza forming a civic center. Another large plaza, dominated by an imposing temple, was planned in the central part of the southern section.

Goiania was planned for a population of 50,000 inhabitants, and its extent will be limited by a parkway forming a surrounding greenbelt. When the population reaches the limit indicated, the plan is to construct neighboring satellite cities.

Simple Control of Boston's Budget

By CHARLES J. FOX
City Auditor, Boston, Mass.

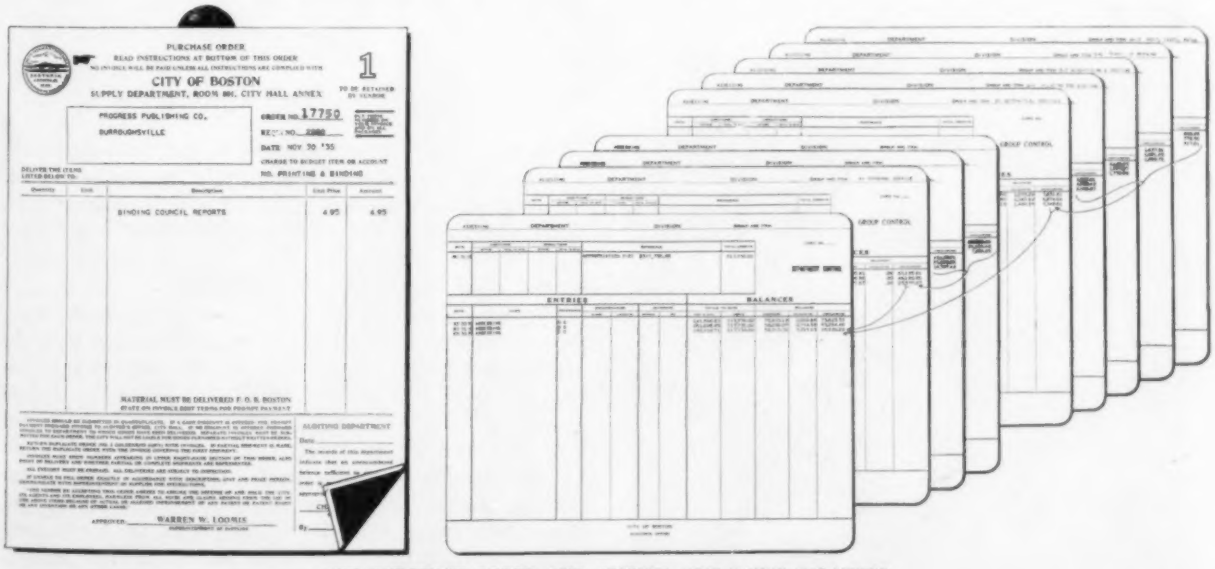
BOSTON now has a budgetary accounting system that flashes "stop" and "go" signals on municipal expenditures. Previous to the adoption of the system now in effect, the control exercised by the City Auditor over departmental commitments was very limited. A department head could incur obligations in excess of segregated item allowances in his budget, feeling reasonably certain that a request would be granted later for the transfer of funds from other items in his budget to cover the bills contracted.

Departmental commitments were being made daily, but the balances remaining in the various budget items were determined only once a month. The Auditing Department had no means of knowing how much of an unencumbered balance remained in an appropriation on a given day, because posting was done monthly and manually, and was confined to expenditures approved for payment.

This lack of system inconvenienced the Auditing Department, the contractor or vendor supplying a city department, and the department itself. And that condition we set out to remedy less than two years ago. Leading firms engaged in the manufacture of budgetary accounting machines were called in, and after due consideration we purchased three Burroughs budgetary accounting machines, and instituted a requisition and order system covering departmental activities.

Starts with Requisition

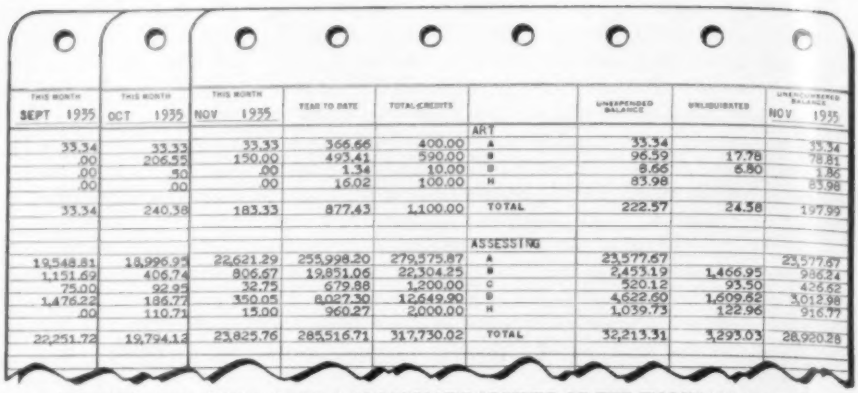
Departmental purchases are initiated within the various



THE PURCHASE ORDER AND (RIGHT) THE DAILY BALANCES

The department states what it wants, and the quantity; the Supply Department selects vendor and price after checking balance available in the budget item affected, which in this case is printing and binding. At the right, note the five totals: (1) money paid out to date; (2) the appropriation; (3) unexpended; (4) orders not yet paid for; (5) unencumbered balance

departments by the preparation of requisitions for submission to the city's Supply (or Purchasing) Department. When all details have been ironed out by the Supply Department, purchase orders (with six copies to a set) are prepared and all copies are forwarded to the disbursement division of the Auditing Department, where items are checked to see that they have been designated for the correct budget classification. The items then are extended, mentally or on calculators, and the amount placed on only the Auditing Department's copy of the order.



THIS MONTH SEPT 1935	THIS MONTH OCT 1935	THIS MONTH NOV 1935	YEAR TO DATE	TOTAL CREDITS		UNEXPENDED BALANCE	UNLIQUIDATED	UNENCUMBERED BALANCE NOV 1935
					ART			
33.34	33.33	33.33	366.66	400.00	A	33.34		33.34
.00	206.55	150.00	493.41	590.00	B	96.59	17.78	78.81
.00	.50	.00	1.34	10.00	D	8.66	6.80	1.86
.00	.00	.00	16.02	100.00	H	83.98		83.98
33.34	240.38	183.33	877.43	1,100.00	TOTAL	222.57	24.58	197.99
					ASSESSING			
19,548.81	18,996.95	22,621.29	255,998.20	279,575.87	A	23,577.67		23,577.67
1,151.69	406.74	806.67	19,851.06	22,304.25	B	2,453.19	1,466.95	986.24
75.00	92.95	32.75	679.88	1,200.00	C	520.12	93.50	426.62
1,476.22	186.77	350.05	8,027.30	12,649.90	D	4,622.60	1,609.82	3,012.98
.00	110.71	15.00	960.27	2,000.00	H	1,039.73	122.96	916.77
22,251.72	19,794.12	23,825.76	285,516.71	317,730.02	TOTAL	32,213.31	3,293.03	28,920.28

THE MONTHLY EXHIBIT GIVES A PROGRESSIVE PICTURE OF THE WORKINGS OF THE BOSTON BUDGET

These monthly budget balance sheets are overlapped for quick comparison, and show the month's expenditures and the state of the appropriations

Cost Checked with Budget Balance

Now comes a most important step in the handling of an order. At this time the estimated cost of a purchase is compared with the balance available in the budget item affected. Item balances are recorded in the appropriation ledger, which consists of a number of ledger cards on which all records have been produced by the budgetary accounting machines. If the item balance indicates an availability of funds, the purchase order is approved and five copies are sent on their way so that the purchase can be consummated. The copy retained by the Auditing Department is sorted and grouped with others from the same department and pertaining to the same budget account. Budget items are totaled by department groups but posted individually to the appropriation ledgers—a daily operation.

This procedure, as described for purchase orders, is also followed in the case of service orders (issued directly by departments to cover services rendered by outside concerns), printing orders (issued by the Printing Department to cover all office supplies requisitioned by departments) and contracts. In short, every proposed commitment must be recorded in and approved by the Auditing Department before it can become a definite obligation or liability of the city.

BUDGETARY ACCOUNTING MACHINES

With modern equipment the Auditor's clerks are at ease in handling daily postings to the appropriation ledger

Informative Ledgers

Appropriation ledgers are the heart of Boston's budgetary control system. Without appropriation ledgers—definite, accurate, and up-to-the-minute commitment orders would become so many slips of paper or debts incurred through uncontrolled spending. Also, without benefit of appropriation ledgers, the city's financial status would be a matter of conjecture 29 days out of every 30.

When a commitment order comes through and the ledger card for the budget item represented is withdrawn from its tray, the balance is observed and the commitment authorized or placed in suspense. The ledger contains all the information essential for controlling department activities. Perhaps the most interesting feature is the five totals which appear whether the posting has been for encumbering an account or for recording the payment of a bill.

Five Totals or Balances

The first total gives expenditures to date on a particular account. The second total is appropriation credits to date. The third balance is the unexpended cash for the account. The fourth balance shows the unliquidated or outstanding commitments. The fifth balance is the unencumbered amount which is available for commitment.

The unencumbered balance, a constantly diminishing total, is arrived at after taking into consideration both the amount that has been paid out and the amount that has been obligated. The unencumbered balance is a safe guide for future commitments. The few forms illustrated here show how the individual appropriation ledgers build up the monthly group controls, and how these group controls produce, on a single ledger sheet, a handy control for a whole department. Brought together, the totals from all department controls show the status of the city's budget.

Finally, we make up a "monthly exhibit" which is a budget balance sheet available a few days after the close of the month (see top of page).

Mechanical Type Activated Sludge Plant for Sewage and Dairy Products Wastes

Waverly, Iowa, Publicizes Plant in Local Store and Newspapers

WAVERLY set an example last summer which it would be well for many cities to follow. It decided to publicize its sewage-treatment plant, built at a cost of $78,280, including intercepting sewers. Of this amount, the Federal Government gave $23,000 as a PWA grant. The balance is to be paid by the taxpayers. For a week in July during the time when the effluent of the dairy products plant was being discharged, the stream would have been a stinking mess if the sewage-treatment plant had not been completed and placed in operation. During this time, however, the stream was as clean as any fishing stream, and samples of the drinking water of the city and of the effluent from the sewage-treatment plant were placed each noon in a prominent show window on the main shopping street. With the samples was a large show card telling what the samples were and how much the filth in the sewage had been reduced by the treatment being given it at the new plant.

The two newspapers in the city gave the samples front page publicity. The *Bremer County Independent* started the campaign off with the following statement that tells the public what the plant is doing:

"Efficiency in sewage treatment is measured by the reduction in the amount of oxygen needed to supply the bacteria which remain in the water. It is this 'need for oxygen' which makes it dangerous and harmful to dump raw sewage into rivers, for sewage bacteria then use oxygen needed by fish and animal life.

"The local plant is now showing about a 97 per cent reduction in this oxygen need, and the 'effluent' is so clear that it is difficult to distinguish it from water taken from a city water tap."

The Superintendent was a little worried about the chance of getting a shopkeeper who would let his show window be used for the display of samples of sewage, but he was delighted when the very first store he approached on the question gladly agreed to cooperate and gave him an excellent location amid an attractive display of ladies' shoes.

Sewerage and Pumping Station

Waverly has a population of about 3,600, but the sewage is far stronger than the mere population figure would indicate, for a fairly large milk-condensing plant is located within the city, and the wastes from the plant are discharged into the city sewers. The sewers are mostly separate, but about sixteen catch-basins on one street still connect with a sanitary sewer, thus increasing the flow in times of storm. The average daily flow is about 375,000 gallons.

The sewage is collected in a 12-inch line which runs to a manhole on the bank of the Cedar River, where there is an overflow weir. From the catch-basin the sewage flows through a pair of 8- and 10-inch pipes carried as inverted siphons under the river. Each line has a gate-valve so that the sewage can be by-passed to the river in case of trouble at the sewage pumping station on the other bank.

The sewage enters the pumping station through the two cast iron siphon lines, and flows to the wet well. The elevation of the sewage in the wet well determines the number of pumps to be used in delivering the sewage through the 8-inch cast iron line to the plant, about 1,388 feet distant. There are two 400-gallon American Well Works pumps driven by 7½-hp Century motors, and one 200-gpm American pump with a 5-hp motor. On the pump suctions are two Chicago Pump Co. comminutors of 10-inch diameter. The pumps are started and stopped by an Automatic Controller Co. series of mercury switches operating the relays. The sequence of pump operation is to start the 200-gpm pump; then as sewage flow increases in the well, to start the 400 and stop the 200. With increasing flow, the 200 is again thrown into action, then the 200 is cut out and the second 400 thrown into operation. Finally, the 200 is again thrown in to give full pumpage to the plant. The pumps are each controlled by single mercury switches which are tipped forward or back to start or stop the pumps by a series of properly proportioned cams on a single shaft which is rotated by a float in the wet well.

INTERNATIONAL *Power*

keeps the highways open

POWER your snow-removal equipment with International Trucks and Tractors and you'll be in shape to lick this acute winter problem. Despite highway-blocking blizzards and sub-zero weather, these International units came through everywhere last winter with flying colors. They have the POWER and STAMINA it takes to keep the highways open for traffic. Lose no time in planning your snow-removal program — you will get effective results by centering it around International Trucks and Tractors. See the nearest Company-owned branch, or International dealer for complete information on these lines.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 So. Michigan Ave. Chicago, Illinois

Above: An International Model A-8 Truck cutting through a blocked highway in northern New York.

At Right: The City of Evanston, Ill., uses 4 International Model I-12 Tractors to clean sidewalks.

Below: The efficient Model T-40 Trac-TracTor proved invaluable to Racine County, Wis., during last winter's record-breaking snow.

INTERNATIONAL HARVESTER

The Treatment Plant

The sewage enters the plant through distributing bars into a 3-pass grit chamber, or can be by-passed direct to the aeration tanks. At the division box for the activated sludge at the end of the grit chamber the activated sludge is divided, the major portion being returned to the first aeration tank, and the remainder wasted to the primary tank, to be settled with the primary solids.

The primary settling tank is a Dorr Sifeed clarifier of 50,000 gallons capacity. The comminuted coarse matter settles readily in the primary tank and is pumped to the digester with the primary sludge. There are four aeration tanks, equipped with American Well Works mechanical aerators. The aeration mechanism in all four tanks is run intermittently for 95 per cent of the time, the time control being located in the control building and operating automatically.

Each of the mechanical aerators has six channels or troughs 13½ x 13½ inches in cross-section, which pick up the sewage at the corners of the hexagonal tank and deliver it to the aerator. Samples of sewage from any point of the aeration tanks show dissolved oxygen at all times, indicating the thoroughness of the mixing of air with the sewage by the mechanical aerators.

The secondary clarifier or settling tank is another Dorr Sifeed unit. The plant was designed and guaranteed to give 90 per cent reduction in solids and has averaged better than 96 per cent since it was started in August, 1935, in spite of the load of milk condensery wastes. The reduction in B.O.D. has been about the same as in solids.

In the basement of the control building are two American Well Works sludge pumps with 4-inch discharges, and each has a U. S. Electrical Manufacturing Co. 3-hp motor with a variable speed drive consisting of two cone pulleys through which an infinite number of speeds can be secured. A total of 24 valves in the basement permits of any conceivable combination of pumping to or from any one of the tanks, the digester or the sludge beds. The discharge lines from the pumps are painted aluminum color, and in black they tell just where the particular lines go to, such as "River," "Recirculation," "Sludge to Digester," "Open Storage," "Sludge Bed," "Return."

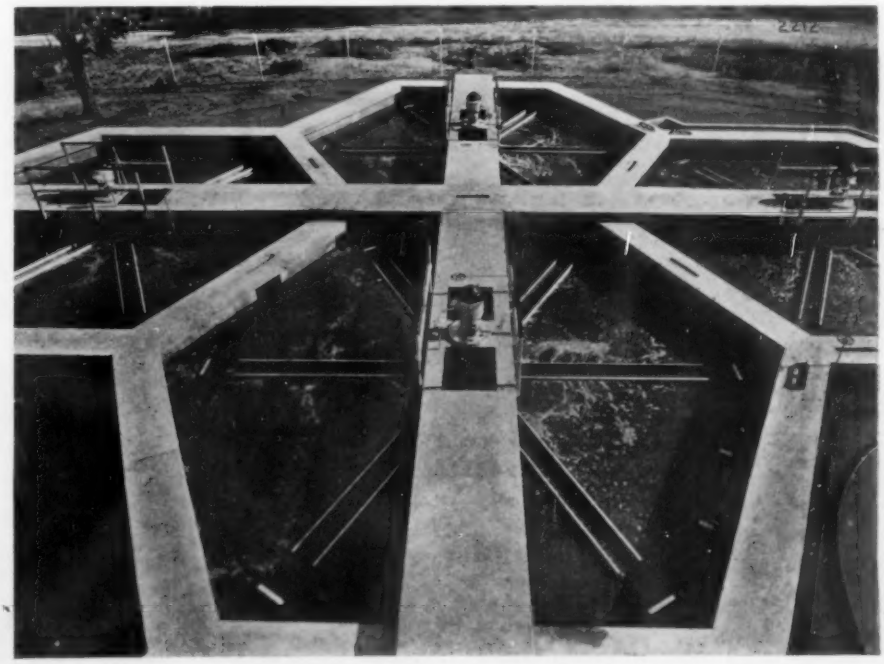
Within six weeks of the starting of the plant they had digester gas for the operation of the Bryant gas boiler to heat the water for the sludge digester coils. Thermometers on the outgoing and return lines to the digester show the temperature of the water. A hand valve is used for by-passing the proper proportion of the return water from the digester to cool the high-temperature boiler water. A Bell & Gossett circulating pump keeps the water circulating in the digester coils. There is no meter on the circulating line, so the actual input of heat to the digester is not known.

Gas from the digester, which is 22 feet diameter and 27½ feet deep, is measured by an Emco gas meter after being scrubbed and passed through PFT flame traps. A reducing valve on the gas line to the boiler and a shut-off valve operated automatically cut off the gas to the boiler if the temperature of the boiler water goes higher than 180 degrees. Extra gas not needed for the boiler is wasted through a PFT burner on the roof.

The pumps in the basement of the control building have a set of switches there as well as a set of push-button switches on the control panel on the ground floor of the building. The pumps can also be completely disconnected at the switchboard so that work can be done on them without danger of short-circuits or electrocution. An American Well Works sump pump in the basement takes care of the drainage of the building.

There is no stirring mechanism in the digester, the only method of mixing the sludge being by recirculation through one of the pumps in the basement. Digested sludge from the digester is pumped to the four sludge beds, which are each 86 x 25 feet and composed of sand underdrained at a depth of 18 inches. Creosoted planks define the ends and sides of the beds. The sludge is run onto the beds to a depth of about 10 inches to secure the best results.

During the winter when sludge cannot be run onto the

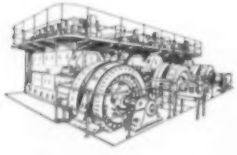


GENERAL VIEW OF THE FOUR AERATORS IN OPERATION, IN THE WAVERLY, IOWA, SEWAGE-TREATMENT PLANT

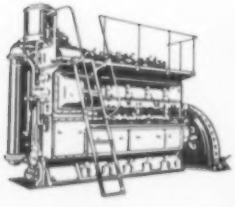
There is no Substitute for EXPERIENCE

EVERY Diesel engine should more or less reflect somewhat the experience of the builder.

McIntosh & Seymour was organized as an engine builder in 1886. More than 1800 steam engines of various types and sizes up to 10,000 hp. were built prior to 1913. However, in 1913, or 23 years ago, the building of steam engines was discontinued, and thereafter the entire engineering personnel and manufacturing facilities were devoted exclusively to the development, manufacture and sale of Diesel engines.



Sulzer Brothers of Winterthur, Switzerland (from whom the Diesel Engine Division of the American Locomotive Company holds a license to build the Alco-Sulzer two-cycle Diesel engine), was established in 1834—although the name Sulzer had been identified with the metal working industry since 1775. They built their first steam engine in 1851. As early as 1893, the year that Rudolph Diesel secured his first patent, Sulzer Brothers obtained the manufacturing rights of the Diesel Oil Engine, and were therefore actively engaged in Diesel engine development from the very beginning.



Furthermore, we have also the American Locomotive Company and its 100 years experience building railroad power units of all types.

Such is the background of the Diesel designs being offered by the Diesel Engine Division of the American Locomotive Company.

There is no substitute for experience.

AMERICAN LOCOMOTIVE COMPANY
DIESEL ENGINE DIVISION
OFFICE AND WORKS, AUBURN, N. Y.
NEW YORK, N. Y., 30 Church St. BOSTON, MASS., 26 Newbury St. CHICAGO, ILL., McCormick Bldg. WASHINGTON, D. C., Barr Bldg.
HOUSTON, TEXAS, Esperson Bldg. KANSAS CITY, MO., Commerce Trust Bldg. SAN FRANCISCO, CAL., Bourn Bldg.

beds and it is necessary to remove some sludge from the digester, the sludge is pumped to a circular open storage tank 35 feet in diameter and 10 feet deep. As soon as spring permits the use of the open sludge beds, the sludge from this tank is pumped to the beds, and the tank is cleaned and permitted to remain empty until winter, except in emergencies.

The activated sludge-treatment plant at Waverly, Iowa, is operated by R. H. Peck as Chief Operator under the direction of R. E. Doonan, Superintendent of Municipal Utilities. The plant was designed by Howard R. Green Co., consulting engineers, Cedar Rapids, Iowa.

A Forty-Seven-Year-Old Asphalt Pavement

West Wayne Street, Fort Wayne, Indiana, Has the Oldest Pavement in City

By R. C. HEATH

TESTS were made recently of the bitumen extracted from the asphalt paving mixture used in the construction of West Wayne Street, Nelson to Harrison Street, Fort Wayne, Ind. This pavement, the oldest in the city, was laid in 1889 during the first year of the administration of Benjamin Harrison as President of the United States.

When the Trinidad lake asphalt pavement was constructed on West Wayne Street 47 years ago, this country was thinking in horse-and-buggy terms. Automobiles were unknown. Traffic was limited to horse-drawn vehicles. The highway engineer who designed this pavement never dreamed it would be subjected to a new and more severe traffic test—a test that came with the development of the motor car and truck. Nevertheless, the pavement has stood the test of time and traffic and is still open to traffic every day, although it has given service for nearly a half-century.

How was this famous old street constructed? Records in possession of W. H. Droege, Asphalt Superintendent and Materials Chemist of Fort Wayne, show that Trinidad refined asphalt, light flux oil, cement as the filler, and local pit sand as the aggregate, were used in making the mixture for the wearing surface. No binder course was used. A bituminous cushion placed upon the concrete base supported the asphalt top.

The tests made on the bitumen recovered from cuts made of the wearing surface and taken from this street after its long term of service are of interest. When the pavement was laid, in 1889, the Trinidad Lake asphalt cement used in the wearing surface had an average penetration of 63. A method for determining ductility was not known at that time and was not developed until years later.

The penetration of the bitumen extracted recently was 55 at 77° F., just a trifle harder than it was when it was put into the mixture 47 years ago, while the ductility of the bitumen was just as good as the day it was laid, which no doubt accounts for the long life of Fort Wayne's oldest pavement.

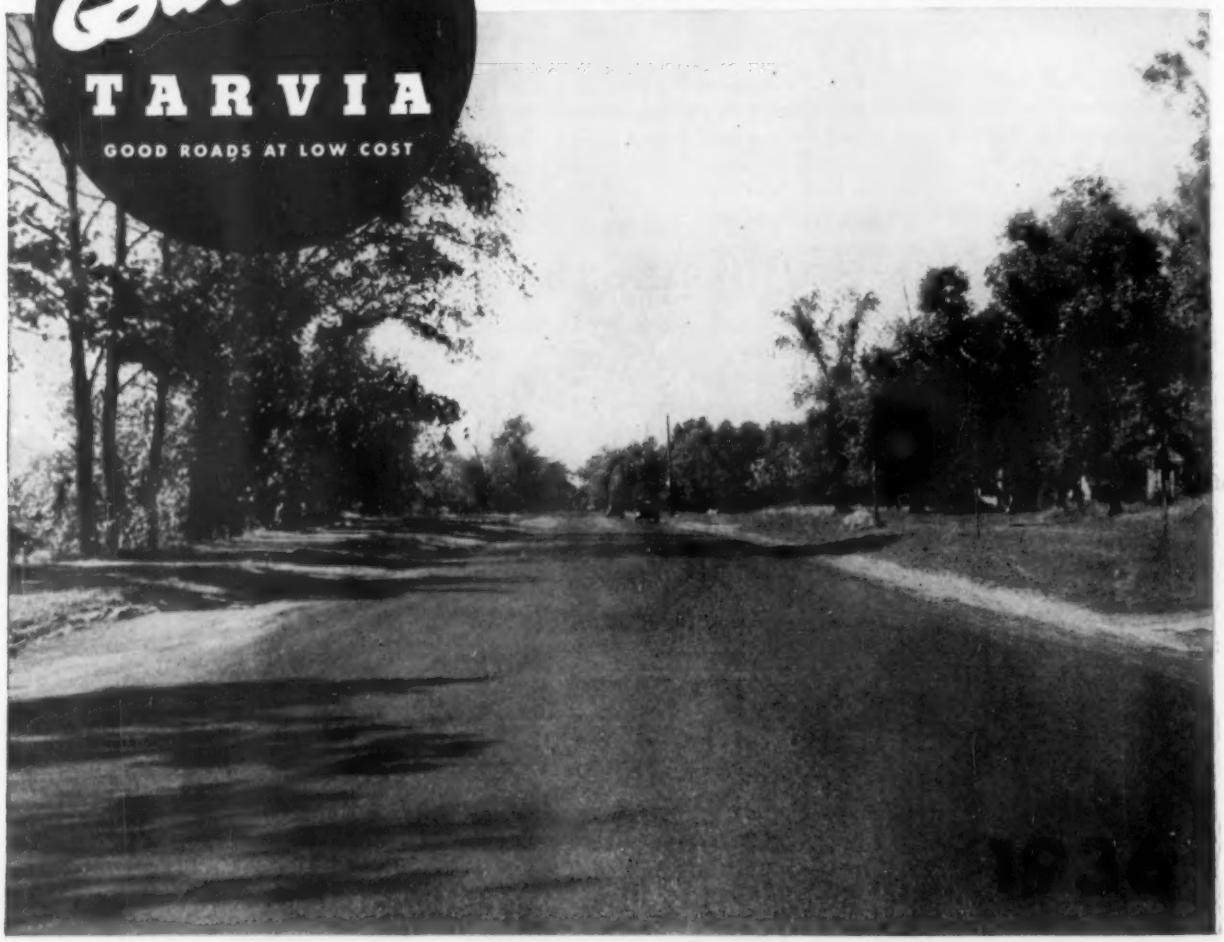
WEST WAYNE STREET, FORT WAYNE, IND., PAVED WITH ASPHALT, LAID IN 1889

East River Boulevard, Minneapolis, Minnesota. Tarvia since 1910. One of the scores of Tarvia roads that have served Minneapolis continuously for twenty years or more.

Barrett

TARVIA

GOOD ROADS AT LOW COST



THE TECHNICAL SERVICE BUREAU of The Barrett Company invites your consultation with its technically trained staff, without cost or obligation. Address The Technical Service Bureau, The Barrett Company, 40 Rector Street, New York, N. Y.

East River Boulevard's twenty-six years of uninterrupted service is striking evidence that Tarvia roads "can take it." Hundreds of Tarvia roads built in the days when thirty miles an hour was reckless speeding are conclusive proof. They cost little to build and maintain, and are just as smooth, easy-riding and skid-safe today as they were when they were new. Let the Tarvia field man tell you about them.

THE BARRETT COMPANY New York Chicago Philadelphia Birmingham Boston St. Louis Cleveland Minneapolis Lebanon Milwaukee Detroit Baltimore Columbus Youngstown Toledo Buffalo Providence Syracuse Hartford Cincinnati Bethlehem Rochester Portland, Me. Norwood, N. Y. In Canada: THE BARRETT COMPANY, LTD. Montreal Toronto Winnipeg Vancouver

Automatic Control of Booster Pumps in El Paso, Texas

Unusual Conditions Attendant on Deep-Well Supply

THE deep wells which supply water for the city of El Paso, Texas, are located in various parts of the the city, some within a few blocks of the center of the business district, and others as far as 7 miles away. These wells yield considerable sand for the first year if the deep-well turbines are started and stopped very often. For this reason, each turbine delivers its water to a covered concrete settling basin which acts as a sand trap.

Booster pumps take the water from these settling basins and deliver it direct to the mains of the distribution system. Main pressures vary from 30 to 100 pounds per square inch, depending upon the location and elevation of the station, as compared to that of the reservoirs, which are located at the north edge of the city. There are four covered concrete reservoirs, having a total capacity of 50,000,000 gallons. No pumps feed directly to the reservoirs, since they receive only the excess over consumption. During the summer months, peak consumption may be twice as great during the early evening hours, when lawns are watered, as during other portions of the 24-hour period.

Automatic Control Needed

Each booster pump is designed to handle only the output of the well at which it is located and when the booster is operating against the highest main pressure at that location. A drop of only a few pounds in the main will cause the booster pump discharge to exceed the steady flow from the well. Such an operating condition, over a sufficient period of time, causes the booster to drain the settling basin, and either become air-bound and damaged, or deliver considerable air to the mains. Necessarily, therefore, the discharges from the booster pump must be controlled.

One group of four wells has a central booster station. As this station has 24-hour attendance, hand control is satisfactory and automatic control has never been installed. The rest of the wells are widely scattered over the city, each well, pump station and settling basin being located on a 50 x 125-foot lot. A house is also located on each of these lots and is occupied by one of the pipe line foremen. This foreman, however, is at the station only at night, with the result that the pump operates most of the time without attendance. All these stations have been equipped with automatic control for the booster pump discharge.

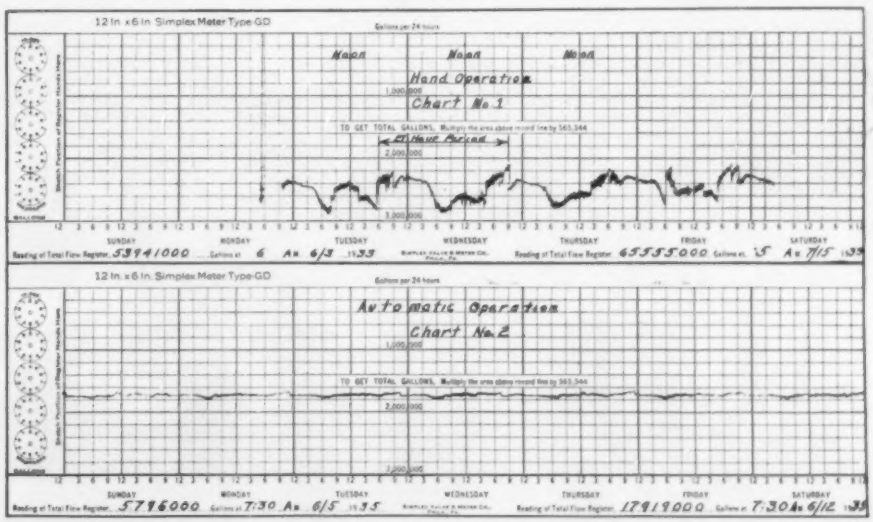
Automatic Control Effective

The automatic control is simple and effective. A butterfly valve is installed in the discharge piping of the booster pump. A float in the settling basin operates the butterfly valve through a shaft and links. The float is merely a 30-gallon hot-water tank which develops more than ample power to operate the valve, which is so set that any change in the water level in the settling basin will change the rate of pump discharge. Even though a main should break nearby, the pump discharge would be brought back to a quantity equal to the well discharge within a few minutes. A hand-operated valve is also provided, bolted directly to the pump discharge. This valve is used only for starting, and otherwise is wide open.

All booster pumps are equipped with venturi meters, pressure recorders, electric meters, etc. The two flow register charts reproduced below are typical samples of hand-control conditions and automatic control.

Hand Control

The history of a 27-hour period during hand control, as shown on chart No. 1, is instructive. The chart shows that at 6 P.M. on Tuesday the booster pump discharge was at a rate of 2.8 mgd. At that time the operator left the job, but before leaving he cut the flow back to 2.3 mgd. Be-



CHARTS MADE AT EL PASO, TEXAS, BOOSTER PUMPING STATIONS, COMPARING RESULTS OF HAND AND AUTOMATIC CONTROL OF PUMP DISCHARGES

SUBJECT— BRICK PAVEMENT MAINTENANCE COSTS

PLACE— WILLIAMSPORT, PA.

PERIOD— WINTER 1935 - 36

MILEAGE— 27 MILES, TOTAL

MAINTENANCE COSTS— $20.00

PRESENT CONDITION— EXCELLENT

AUTHORITY— MR. LYONS MUSSINA, CITY ENGINEER, WILLIAMSPORT

REMARKS— THE WINTER OF 1935 - 36 WAS ONE OF THE SEVEREST ON RECORD, WITH WIDESPREAD WINTER DAMAGE TO PAVEMENTS.

Williamsport Sun comments editorially April 22: "If the people of Williamsport were to be asked their opinion as to the best paving material for city streets as demonstrated by the severe winter and flood, we believe they would express a preference for brick as a material of proved superiority."

THIS DATA PUBLISHED BY NATIONAL PAVING BRICK ASSOCIATION, NATIONAL PRESS BUILDING, WASHINGTON, D. C.

Less Than One Dollar Per Mile Was The 1935-36 Winter Damage Costs On Brick Pavements At Williamsport, Pa.

Low maintenance S. Williamsport, Pa.
Busy Williams Street Brick Paved in 1921
High St., important Williamsport artery
Check your upkeep costs against 27 miles for $20
Heavy duty; Built 1905 Relaid 1927
Park Ave.—Susquehanna Trail

BRICK

PROTECTS AGAINST *Weather* AS WELL AS TRAFFIC

tween 6 and 9 P.M., the pump operated without attendance. At 9 P.M. a new operator arrived and he increased the flow to 2.5 mgd. From that time until 4 P.M. Wednesday afternoon, the valve was not touched, and during that period the flow ranged from a minimum of 2.25 mgd to a maximum of 2.9 mgd, this variation being due to changes in the pressure in the main. At 4 P.M. Wednesday afternoon, the operator cut the flow back from nearly 2.8 mgd to 2.4 mgd. The pump operated without attendance until 9 P.M., at which time the flow was 2.1 mgd. The new operator came on at 9 P.M. and increased the flow to 2.5 mgd.

Automatic Control

The second chart covers a full week of operation under automatic control. It will be noted that the high peaks are slightly less than 1.8 mgd, the low about 1.65 mgd, and the average is about 1.7 mgd.

—THE AMERICAN CITY is indebted to E. Nevins, Chief Engineer, El Paso Water Works, and to the Pump Division of Byron Jackson for the material on which this article is based and for the illustrations.

Motorcycles in Fighting Mosquitoes

Richmond County, Georgia, Enlists New Vehicle to Spray Catch-Basins

SINCE the middle of April, 1936, Richmond County has been using a novel outfit for spraying stagnant pools, catch-basins and open sewers with oil. Malaria-bearing mosquitoes hatch out in such spots unless a coating of oil over the surface checks the breeding of the insects.

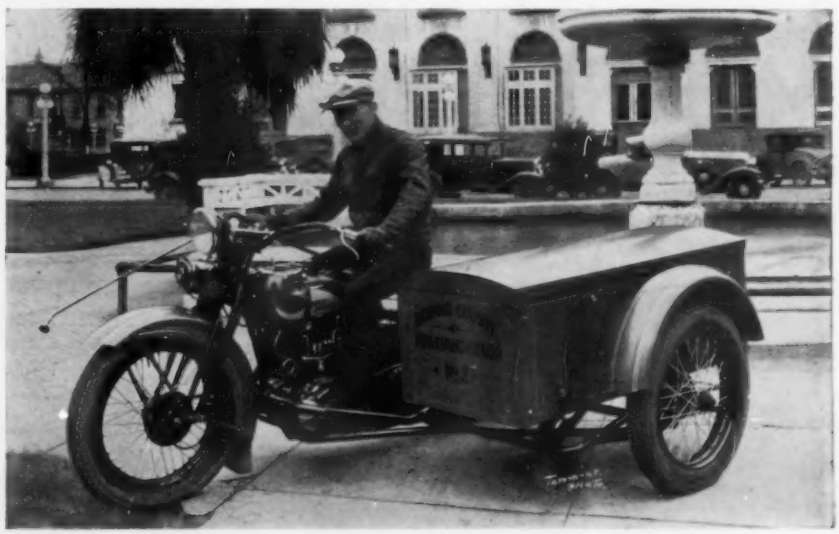
The spraying equipment is carried in a standard model package truck attached to the left side of a Harley-Davidson motorcycle. This makes it easy for the operator to work quickly and to spray catch-basins and pools on the right side of the road as he drives the motorcycle up and down the streets. Without dismounting, the rider can cover all spots to be sprayed with oil by means of a long extension nozzle. When the operator draws up to a catch-basin, it is only necessary for him to place the nozzle inside the basin and press the control lever, and the oil is blown for a distance of 5 feet over the sides of the catch-basin as well as on the surface of the water in the bottom. This work was formerly done with an ordinary sprinkling can, which covered only the lower part of the basin and resulted in a great waste of oil. The new motorcycle equipment uses only about one-fifth as much oil as was necessary with the sprinkling-can method.

The package truck, mounted on the side-car frame, is equipped with a 24-gallon tank, an air gage on the tank, a filler valve through which the oil or disinfectant can be poured, a shut-off valve between the tank and the extension nozzle, and an air valve for building up air pressure.

When ready to operate, 8 gallons of oil are placed in the tank, which is then charged with air at 80 to 100 pounds pressure, and the driver is ready to proceed with his work of spraying some of the 5,000 catch-basins and other mosquito-breeding spots in Augusta, where the county is operating this machine.

Other cities are successfully combating the spread of malaria with motorcycles similarly equipped. The District of Columbia has four machines which regularly visit every known spot where malaria-carrying mosquitoes might breed, and properly cover them with oil.

The success of these mosquito fighters is directly due to their adaptability for the work. The operator works without dismounting, the outfit quickly weaves through traffic from one location to the next, and the machine can be driven into fields and other places where heavier equipment would be greatly handicapped. At the initial test in Augusta, the sanitary inspector treated 50 sewers in one-half hour.



THE EFFECTIVE MOSQUITO ABATEMENT OUTFIT OPERATED BY THE RICHMOND COUNTY, GA., HEALTH DEPARTMENT

LATEST SCIENTIFIC FINDINGS SHOW THE VALUE OF CALCIUM CHLORIDE IN PORTLAND CEMENT CONCRETE

HIGHEST technical authorities, including the U. S. Bureau of Standards, Portland Cement Association, and state highway departments, know after years of testing that Calcium Chloride is a beneficial agent in Portland Cement concrete. It is an automatic curing agent, makes a more workable mix, gives higher early strength, permitting quicker removal of forms—in short, provides so many benefits that officials and contractors cannot afford to do without it.

CURES PAVEMENTS

Calcium Chloride takes the place of earth, straw and other costly, cumbersome curing methods. Pavements cured with Calcium Chloride in the mix develop required opening strength in half the time of old-fashioned curing methods. Forms may be removed sooner, and the same forms used on twice as much work. Hauling of earth or other covering materials, as well as constant inspection and wetting, are entirely eliminated. Curing is fast, safe and automatic with Calcium Chloride.

FASTER FLOOR FINISHING-EASIER TO WORK

Rapid development of hardening and high early strength permit rapid finishing of floors to keep up with structural work. Being made more plastic with Calcium Chloride, concrete trowels more easily and flows more readily into forms, which may be removed in a shorter time for use on other work.

NEEDED IN ALL CONCRETING-PAVEMENTS, FLOORS, STRUCTURES OR PRODUCTS

Tests prove Calcium Chloride's reliability, safety and practicability. Improved workability, wearing quality, density, low volume change, accelerated hardening, and cold weather protection are now all confirmed by scientific facts. Its moisture control is especially needed in block, tile and thin-section structural work where exposure causes rapid drying out.

Write for special information on your particular problem.

Calcium Chloride Association

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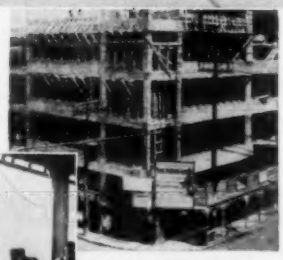
The Columbia Alkali Corporation	Barberton, Ohio

Calcium Chloride Curing is faster—more automatic.



Calcium Chloride Curing is the only practical method for curing vertical structural concrete.

Above—Faster finishing is made possible by including Calcium Chloride.

Right—Concrete products need Calcium Chloride Curing.

CALCIUM CHLORIDE FOR MODERN CONCRETE CURING

A One-Man Incinerator for a Canadian City of 18,000

St. Thomas Burns Mixed Wastes Near Center of City, with No Nuisance

THE by-laws passed by the City Council of St. Thomas, Ontario, require that if the amount of garbage accumulating at a residence or place of business exceeds 12 cubic feet per week, a second collection shall be made. This accounts for the single collection in most of the city and the two collections in the center of the city where the markets, restaurants and hotels are located. It also accounts for the double collection which started July 27, 1936, since the by-law also provides that between June 15 and September 15 there shall be double collection throughout the city if the financial condition of the city will permit. After the 1936 tax rate was set, a serious reduction in government subsidies, because of welfare expenses, made necessary some retrenchment in other items if the consolidated city budget was to stand. Consequently, the double collection of garbage was delayed last summer until the end of July, when the City Engineer, who is also City Treasurer, decided that it would be safe to proceed with this service.

The normal collection of garbage and rubbish in St. Thomas is made by a Garbage-Getter which covers the 5½ districts in the city, one each day, the half-district being covered on Saturday. When the double collection started, it was necessary to put on three 3-yard horse-drawn wagons to supplement the motor collector. A careful system of cost accounting has shown the benefits of using the motor collector instead of the horse-drawn wagons. Charging the motor collector at 60 cents per hour, which covers the depreciation as well as the operating costs with the exception of the driver, the cost of collection is 42 cents per cubic yard, while the cost of horse-drawn equipment for the same work is 79 cents per cubic yard, charging the wagon, including depreciation, at 7½ cents per hour.

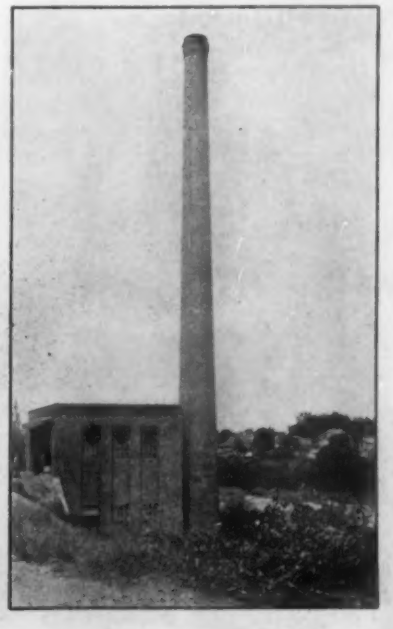
The Garbage-Getter makes as many as twelve trips to the incinerator per 8-hour day, while the horse-drawn wagons make only three or four trips. The motor collector hauls 6 cubic yards per load, with an additional indeterminate amount in a basket mounted over the front of the vehicle, where bundles of branches and other cumbersome but not unsightly wastes are piled for hauling. The horse-drawn vehicles haul 3 cubic yards per load.

One-Man Operation at Incinerator

When the city is having only one collection per week from each district, it has been found necessary to have but one man operate the 48-ton incinerator. This means the disposal of about 11 to 12 tons of mixed wastes in 8 hours, using but one of the two cells for combustion. In order that the man may be safe at all times and prevented from untimely cremation, a stout rope is attached to a safety belt about his waist and carried to a ring running on a horizontal pole attached to two of the roof beams. Thus, if the man should have the misfortune to slip on some greasy garbage and skid toward an open stoking hole, he could catch hold of the rope attached to his safety belt and save himself.

THE ST. THOMAS, ONTARIO, INCINERATOR, WITH A COLLECTION TRUCK DELIVERING ITS LOAD

Note the basket over the cab and hood for carrying bulky materials



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Maintenance costs of *asphalt* pavements are low

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For information and advice on the selection of materials and methods, call in a Standard representative. His services are yours for the asking, without obligation. Just phone your local Standard Oil (Indiana) office or write the main office in Chicago.

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THE BUSIEST STREETS IN THE WORLD ARE PAVED WITH ASPHALT!

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Marshall Avenue, St. Paul, Minn., Stanolind Cut-Back retread on sheet Asphalt.

St. Germain Street, St. Cloud, Minn., paved with Stanolind Cut-Back Asphalt after street car track was removed.

First Street, St. Cloud, Minn., wood blocks replaced with Stanolind Cut-Back Asphalt and a 4½" mixture of crushed granite.

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ASPHALT *goes farther*

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IN LONG-WEARING ROAD MILES . . . *IN* DISTRIBUTION OF LABOR . . . *IN* TAXPAYER SATISFACTION

Excavation at 7½ Cents a Yard

When the city was considering the construction of this incinerator, in 1935, the nearby city of London was in need of fill material to replace a long bridge on its municipally owned interurban electric railroad, the right-of-way of which is adjacent to the incinerator site. The city of London had acquired lands for borrow-pits on either side of the incinerator site. An arrangement of mutual benefit was made. The city of St. Thomas agreed to sell the city of London some 8,000 cubic yards of fill for $600, providing the city of London would excavate the property to grade and lines suitable to the city of St. Thomas. This was carried out and the site excavated to provide for a two-story structure that eliminated a long ramp, and the city of London secured some very cheap fill less than 150 yards from the bridge site.

A Two-Cell Incinerator

The incinerator being within 300 yards of the geographical center of the city, it was felt that it should be treated architecturally with some care. The building is approximately 28 feet square, with an ell on one side housing the fan room below and the operator's room, toilet and corridor above, and the chimney on the other side away from the more important part of the city. The building is of hollow tile and face brick construction with neat metal frame windows, and all important doors, including the main entrance where the refuse is dumped, are equipped with rolling steel doors, the latter being 22 feet wide.

The refuse is dumped onto the loading floor direct from the truck, which is backed against a 10 x 10-inch stop log. It is fed to the cells by hand firing almost continuously. When the operation does not require the burning of more than 11 tons in the 8 hours of work, one man handles the firing, stoking and clinkering. When the collections began to be made twice a week, the first on a Monday gave such a jump to the amount collected that two extra men were used temporarily and then one extra. After the first three days, however, the operation returned to normal.

There are two cells, the second being used only when double collection is in force. The cells are Heenan type units installed by Francis Hankin, Ltd., and include 25 square feet of grate onto which the partially dried refuse is fed from a drying hearth measuring 2 feet 11½ inches by 5 feet for each cell. In order to provide greater efficiency for the units, two supplementary drying arches were installed soon after the completion of the incinerator. Each is only about 15 inches above the grate, the first being at the edge of the drying hearth and the second over the first grate.

All firing is done through the circular holes at the top, and stoking is also done almost entirely from the top, since it is easier to move the material forward from the two drying arches by manipulation from the top than from the stoking floor below. When a cell is started, some supplementary fuel is used, and the city has been fortunate in its misfortunes which have furnished this fuel. Saving paper boxes, excelsior, dry papers and other dry combustibles brought in with the regular collections after the fires have been lighted provides the fuel ordinarily needed. On June 17, 1936, a wind storm of huge proportions visited the city, and many of the older trees were blown down, as well as limbs and brush. Experience had shown that during times of high moisture content of garbage and rubbish, brush cut in lengths of approximately 3 feet and tied in bundles was the most successful way of supplying auxiliary fuel. The brush was stored about the incinerator, and relief labor of the class not able to do heavy work has been given some useful work and the incinerator has some excellent fuel for use during the preserving season.

From the grates the gases of incineration go to the combustion chamber, which measures 10 feet 9 inches long by 4 feet wide by 10 feet high. The temperature of the gases in the combustion chamber are recorded on a Tycos pyrometer in the operator's room, with a double-throw switch so that the same scale can be used for determining the temperature in the regenerating unit. The average temperature when operating is 1450 degrees F. when using the forced draft, and in the regenerating unit about 180 degrees, which is not as high as desired.

Three dampers permit the by-passing of the preheater if desired, and the use of the chimney in full or half draft. The chimney is 110 feet high above the grate and lined with firebrick for a height of 60 feet. There is an air space between the firebrick and the face brick shell of the chimney with four vents around the chimney at a height of 6 feet above the ground to give a natural draft for cooling the shell and preventing cracks from the large expansion and contraction that would occur from full load to shutdown. The inside diameter of the chimney at the top is 4 feet 6 inches.

A screen of expanded metal of heavy section is placed across the flue at the base of the chimney to prevent dry newspapers and other light combustibles from blowing up the chimney. This screen has been in service for a year without need of replacement. The chimney is large enough, as is the building, to permit the installation of a third cell when needed.

The building and chimney with the accessories cost $17,701.56, and the final grading about the plant, which is located on a side hill permitting dumping from ground level and disposal of the ashes at grade below, brought the cost to about $18,000. The incinerator is operated under the direction of W. C. Miller, City Engineer, and consistently burns from 25 to 35 per cent more material than the contractor's guarantee.

Municipal Utility Allowed Profit

THE Court of Appeals, highest court of the state of New York, on October 6 decided unanimously that a municipality owning and operating a utility need not furnish service merely for cost, but is entitled to earn a return on the value of its property. The decision was rendered in the case of the village of Boonville, where the Public Service Commission of the state had denied the village the right to charge rates for service rendered by the municipally owned electric plant which would meet not only the usual operating costs but also provide a profit or return on the investment, even though there were no bonds outstanding against the plant. (See THE AMERICAN CITY for August, 1936, page 55.)

The decision has the effect of preventing the Public Service Commission from limiting the profit or return from the municipal utility to a greater extent than the profits of privately owned utilities are limited, presumably leaving the amount of profit, if any, to be determined locally. It will be regrettable, however, if the question of "value," which has plagued the efforts at regulation of privately owned utilities, is to be injected into rate-making for municipally owned utilities, which have not had to concern themselves with valuations but only with definite capital investment.—H. M. OLMSTED.

Improved 1937 POLICE MODELS *are* HERE

WHAT a wonderful line-up for safety, traffic control, and law enforcement—the new 1937 Harley-Davidson Police Motorcycles!

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Phone your nearby Harley-Davidson Dealer NOW—to bring over a new 1937 model for your inspection. Or write us for literature.

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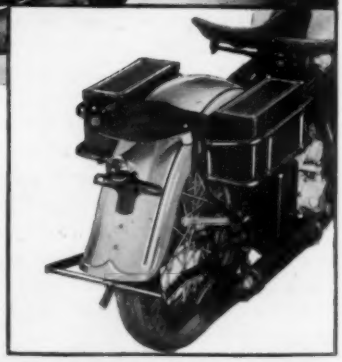

New high impedance screen type antenna, up away from dirt, grime and grease. Compact and light in weight. Improves reception. Saddle bag mounting of radio receiver brings weight way down low—and makes for easier handling of motorcycle.

HARLEY-DAVIDSON
The Police Motorcycle

Louisiana, Missouri, Ends Water and Sewerage Tangle

New Plants Built as Part of PWA Program

ENDING misunderstandings and litigation which began in 1887 with the installation of a privately owned water works, and similar difficulties with the private sewerage system built in 1905, the municipality of Louisiana, Mo., now boasts a well-designed, well-built pair of municipal utilities which will serve it satisfactorily for many years.

Bids for the new municipal water works were called for on August 12, 1935. Thirteen bids were received, and the contract was awarded to J. C. McCormack, of St. Louis, Mo., for the filter plant, intake, reservoirs, pumps and all other equipment, for $74,917. The contract for water-main extensions was awarded to the Merkle Contracting Co., of Kansas City, Mo., for $36,200. Some delay was experienced in selecting equipment and getting PWA approval of the city's actions, so that work was not started until October. Detail plans and specifications were also prepared by the consulting engineers for extensions to the private sanitary sewer system which had been purchased by the city. Bids for this work were received on September 25, 1935, and the contract was awarded to Henry Rees & Sons, of Quincy, Ill., for $42,308.70.

The sewer contractor was fortunate in getting his work started immediately, and practically finished it by the end of December. There were several changes, so that the cost of the work was reduced to $37,897.51. The work included approximately 37,000 feet of 8- to 12-inch with the necessary manholes, and other accessories.

With the purchase of the private sewer system, the city was saved the need of laying new sewers in that area. The municipal system, as extended, gives sewerage facilities to the major built-up sections of the city, and the new sewers are, with few exceptions, of sufficient depth to drain all basements. Both the water-works contractors were delayed because of the severe winter weather, so the work was not completed until May, 1936.

The Water-Works Project

The river intake for the water works is a reinforced concrete structure built above high water and with a brick superstructure. It houses two 300-gpm motor-driven centrifugal raw-water pumps which deliver the water to the filter plant. These pumps are controlled by switches from the main plant, and either is large enough to supply the filters at full capacity. The intake is designed for a maximum capacity of 2-mgd. Water flows through a bar screen on the downstream or protected side of the structure into an outer compartment, from which it is piped through basket strainers to the pumps. The main structure is always dry inside.

The filter plant has two units with a total capacity of 300 gpm, and sufficient space for a future unit to double the capacity. The main building is a two-story structure built of face brick with white concrete trim and having a steel fireproof roof. The first floor contains the engine generator units, switchboard, piping, pumps and heating plant. The second floor is for operating the filters, and has the filter instruments, laboratory and operator's office space. The basins and filters are all of reinforced concrete. West of these is a brick building used for chemical storage.

The water is first pumped into a mixing chamber built with closely spaced baffles arranged for over-and-under flow. Aluminum sulphate, hydrated lime and activated carbon are added. The water travels at a rate of 25 feet per minute for about 25 minutes to completely dissolve and mix the chemicals.

The water passes into the two settling basins, which are 60 feet long and have a 6-hour detention period. Each settling basin is equipped with a Rex chain and scraper type sludge collector, which moves the settled floc to one end, from which it is drained through a sewer.

From the settling basins the water goes to the rapid sand filters, and through them to the clear well, where it is treated with chlorine. The reinforced concrete clear well has a capacity of 150,000 gallons.

The filters are washed by pumping water back into the underdrain and up through the gravel and sand. All main valves for the filters are hydraulically operated. All filter equipment was furnished by the International Filter Co., using Republic flow meters.

There are three Dayton-Dowd pumps in the main building, one 1,200 gpm wash-water pump, and two 300 gpm high-service pumps, with space for an additional unit. They are powered with Westinghouse electric motors.

Electric Generating Station

An unusual feature for a plant of this size is the electric generating station for the operation of all motors and other electrical equipment. Investigation had showed that this would be much cheaper than purchasing power. The city already owns an 80-hp natural gas engine and speed increaser in the present plant. An electric generator was attached to this, and with the low price for gas this provided economical power for pumping. A 75-hp Worthington diesel engine with a Westinghouse generator was installed for standby operation in case the gas unit was shut down or there was a shortage of fuel. The switchboard is complete with all the necessary instruments for proper plant operation.

The electric utility has supplied a standby connection for lighting service, and when the city plant is shut down for any reason, an automatic switch connects the standby to the lighting circuit.

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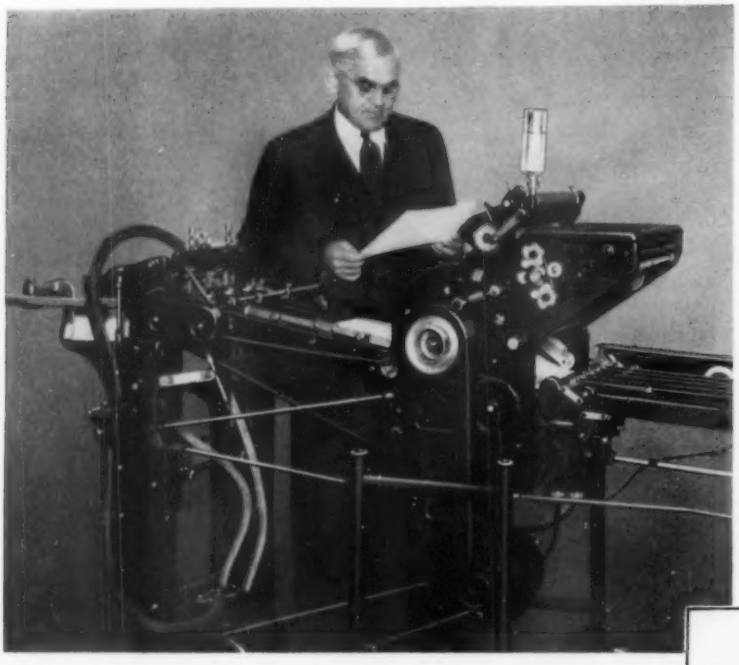
IN ITS MUNICIPAL DUPLICATING DEPARTMENT



Mr. Harold W. Baker, City Manager of the present administration, realizes the advantages and great savings Multigraph Methods mean to the taxpayers of the City of Rochester. He recently enlarged the department by adding a Multilith offset duplicating machine. Mr. Baker is seen critically examining work from the new machine.

Any city official who would like first-hand information on the value of a Municipal Duplicating Department, should write to Mr. Baker who will be glad to report on the experiences of the City of Rochester with Multigraph and Multilith equipment.

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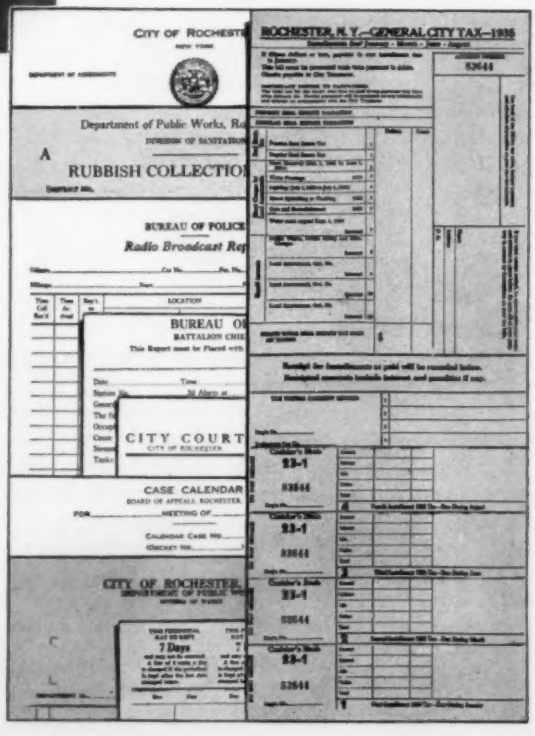

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Storage Reservoirs

There are two reinforced concrete storage reservoirs completely covered, one with a capacity of 350,000 gallons in the northwest part of the city, and the other in the north section with a capacity of 150,000 gallons. These reservoirs are about 40 feet lower than the old reservoir, thus saving on pumping costs and reducing the pressure on plumbing in the lower sections of the city. With the improved system there is still ample pressure for fire protection.

The distribution system extensions consist of approximately 32,500 feet of 4- to 12-inch cast iron pipe with 49 gate valves and 54 fire hydrants. These lines were laid to replace numerous small galvanized pipes and to connect various dead ends. The lines were interconnected with the existing system so as to give a much greater flow at better pressure for fire fighting.

Water Rates and Charges

The rates for water service and hydrant rental and the cost of sewer service have been unusually high in Louisiana, Mo. With the acquisition of the sewer system, that service charge was discontinued. The people will, of course, have to pay off the bonds issued for the new sewer system, but this will cost much less than under private ownership. Once the system is all paid for, the cost will be negligible, for the operating and maintenance expense is low.

It is believed that the city will soon be in a position to reduce the water rates, or at least the cost of hydrant rental, for which a tax was levied when the system was privately owned. As the bonds are paid off, the charges for interest will decrease. With the reduction of rates and better economic conditions, more people will avail themselves of the service or use more water, resulting in increases in revenue.

The city paid about $138,000 for the private water works and the two private sewer systems. The estimated cost of the water and sewer improvements and extensions, including real estate, legal, engineering, interest during construction, and miscellaneous costs, will be about $185,000. Of this, the PWA pays a 30 per cent grant, or about $48,500.

The W. A. Fuller Co., consulting engineers, St. Louis, Mo., were in charge of design and construction, with H. L. Fuller as Resident Engineer, assisted by E. L. Green and M. E. Pearson. Henry F. Merker was PWA Resident Engineer-Inspector. The city employed Paul Dexheimer to represent the Council as City Engineer.

What Price Parking?

By WILLARD CHEVALIER

WITH all the effort for more efficient municipal administration, it is interesting to observe how little progress is made with the wasteful parking nuisance. It is not entirely clear why private individuals should be permitted to use the public streets for the storage of their cars at any time. And when the street areas thus preempted are so urgently needed for their intended purposes, the mystery is deeper.

Consider, for example, certain business streets in New York City. To avoid congestion they have been made one-way streets. But from morning until night both sides of those streets are lined with cars, bumper to bumper, that cut the effective width of the streets from four-lane to two-lane. But that is not all. Delivery trucks must double park, which reduces the width to a single lane and often blocks the street altogether. Much of the time traffic through those streets is a mere trickle of cars that must await two to four light-changes to move the length of a block.

Yet on those streets the people of New York have taken some of the most costly real estate in the world, have graded, curbed and paved it and maintain it for the purpose of moving traffic and giving access to their property. They have provided for four lanes because they need four lanes. Yet a handful of individuals are permitted to preempt 50 per cent of that costly real estate in order to avoid a 50-cent parking-lot fee, while the cost to thousands of others, in lost time, excessive fuel usage, loss of access and danger of life and limb is wholly ignored.

Although these conditions may be extreme, they are repeated in some measure in other cities with proportionate waste to the many for the benefit of the few. And not the least interesting aspect of it all is the success with which the beneficiaries seem to ward off any move toward curbing the abuse. To be a public nuisance seems to have become a vested right of the few that the many are bound to respect.

Some cities have abated the nuisance by installing parking meters. These, we are told, have reduced the storage parking; at least they are returning to the taxpayers something for the use of their property. But recently, when such a project was up in one city, both the leading newspapers had fits over it, because, they said, the public had provided the streets and should not have to pay for "using them." All of which overlooks the fact that the streets were provided to *move traffic* and *provide access* for the many, not to *store cars* for the few.

Much of the protest comes from certain merchants who fear that the suppression of the parking nuisance might interfere with their business. Without considering the merits of such a reason, and they are dubious, it would be interesting to know just how much the parked cars in the congested business sections actually contribute to the trade of the merchants. Factual surveys might reveal that parking, as now practiced, interferes so much with access that it is no more to the interest of the merchants than it is to the rest of the public.

Eventually the remedies for this abuse doubtless will include both short-term and long-term measures. Downright prohibition that will force parking out of congested districts and encourage the provision of parking facilities by private enterprise; installation of meters to foster a less thoughtless attitude amongst parkers; use of vacant lots under public auspices; condemnation of a certain area in each block for parking purposes, the cost to be recouped from parkers and from the remainder of the block; revision of building laws to require property owners to store the cars of their patrons off the public streets; these are but a few of the possible remedies.

But until the public demands an end to the nuisance, little will be done about it; and meanwhile the wonder remains that city dwellers will continue to put up with so flagrant an imposition on their patience and pocketbooks.

—From *Engineering News-Record* for October 1, 1936.

Burroughs

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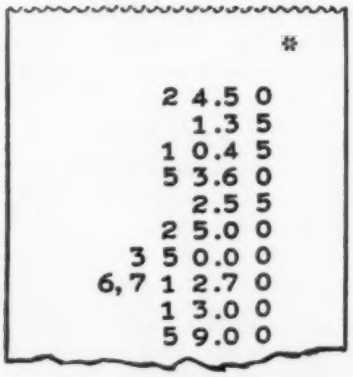

THE 10 TYPICAL AMOUNTS ON THIS TAPE WERE LISTED AND ADDED IN ONLY 11 OPERATIONS

1. Because two or more keys, together with the motor bar, can be depressed simultaneously on the Short-Cut Keyboard.
2. Because there is no cipher key to depress on the Short-Cut Keyboard. Ciphers print automatically.

By using the Burroughs short-cut method the operator can list and add entire amounts in one operation. For example—the first amount ($24.50) was listed and added by depressing the "2" key, the "4" key, the "5" key and the motor bar—*all in one single operation.*

Had each key and the motor bar been depressed separately—and had there been a cipher key to depress—it would have required 51 operations instead of 11 to list and add the 10 amounts shown on the tape above. Thus the Burroughs short-cut method eliminates 40 operations.

Think how many needless motions the short-cut method would eliminate in handling hundreds or thousands of amounts. Think how much time and effort it could save in your business. Investigate today!

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

The New Triple Underpass in Dallas

DALLAS, TEXAS.—One-third of the more than 300,000 people in Dallas live in the suburb of Oak Cliff, which is separated from the city proper by the mile-wide flood-lands of the Trinity River, the city being on the east side, with railroad tracks leading to the Union Terminal lying immediately on the east bank. Underpassing at low grade between the city and Oak Cliff was made possible in 1930-32 by straightening the river, and constructing retaining levees for flood waters and several concrete viaducts. The total traffic load on the five viaducts between Dallas and Oak Cliff is 80,000 daily.

The Commerce Street viaduct is the one in connection with which recent improvements have been made which greatly relieve traffic on U. S. Highway No. 80, which passes through Oak Cliff. Three of the principal city streets—Elm, Main and Commerce—lead west through the triple Commerce Street underpass, and onto the six-lane cross-over connection with a new 60-foot highway skirting the north edge of Oak Cliff, and connecting with U. S. 80 west of it and with several feeder roads to its principal trafficways.

Reversing the view and looking toward the underpass and the city, one appreciates how the utility of the underpass is enhanced by the fanning-out of this approach to the city to connect directly with these three streets. This process separates traffic according to its destination before it enters the busy city streets, and saves many delays in the downtown section. To secure this advantage, a serious problem of crisscross passing of diverging inbound traffic and converging outbound traffic had to be solved.

The scheme finally adopted involves a rectangular cross-over area 220 x 220 feet, at the east end of the viaduct used alternately by eastbound and westbound traffic to and from the underpass. On the west or Oak Cliff side of this cross-over area there is a dividing island which separates inbound and outbound traffic. Inbound traffic is directed into one of the three lanes leading respectively to Commerce, Main and Elm Streets, by means of large illuminated signs placed over the lanes some 700 feet, before reaching the island from the west. The lanes are 20 feet wide and are separated by painted lines except for the last 100 feet, where they are separated by 6 x 12-inch mushroom buttons. At the west end of the island and directly over the lanes are suspended traffic signals and additional signs repeating the lane names. From this point the three lanes diverge into the cross-over area, through the triple underpass and into the fanned-out connections with the three streets. A second string of traffic signals, having two faces, is suspended over the east, or city, side of the cross-over area. When outbound traffic is leaving the three streets, it converges in the cross-over area west of the underpass, and is guided through that area by lines of mushroom buttons, to form a single traffic stream leading to the viaduct.

The inbound and outbound flows are stopped alternately. To provide for the fluctuations in traffic, particularly the morning and evening rushes and the Saturday and Sunday variations, the traffic light controller has been equipped with a program arrangement whereby the duration of either or both of the green indications can be varied by steps within wide limits. It is possible to pre-set a program

Photograph at left by courtesy of Dallas Morning News

LEFT—AERIAL VIEW LOOKING EAST, SHOWING NEW UNDERPASS IN DALLAS, CROSS-OVER AREA, AND THE SPREADING OF THE THREE CONNECTING STREETS. RIGHT, BELOW—GENERAL VIEW LOOKING WEST, SHOWING RECLAIMED RIVER BOTTOM, VIADUCT, AND LEVEES IN BACKGROUND; AT TOP, RIGHT—LOOKING EAST, SHOWING SIGNS MARKING THE LANES TO THE THREE STREETS

ORDERS BENDIX CIVIC SAFETY CLINIC EQUIPMENT

Tests each brake separately—by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS with utmost accuracy.

Tests wheel alignment, caster, camber, toe-in, entire steering geometry, precisely and quickly. Shows exactly what work needs to be done. Nothing left to guesswork or estimate.

OMAHA, too, selects this sure route to *SAFER STREETS!*

CITY after city, where street safety is being taken seriously, turns to Bendix for the vital testing line equipment. Knoxville, Cincinnati, Miami, Billings, Portland—are typical, and the list lengthens each month!

If *your* city has ordered municipal vehicle inspection, insure getting off on the right foot. No matter how much or how little you've got to spend, Bendix, the pioneer sponsor of "Street Safety by Prevention," offers *more* for your money.

Bendix Civic Safety Clinic Equipment is *positively and consistently accurate.* It is fast. It is simple. It is very sturdy.

Most car factories use it on final new-car tests. It covers brakes, steering, headlights, wheel alignment and as much in addition as you desire to check.

Fill out and mail the coupon TODAY.

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Send me at once full details about Civic Safety Clinic Equipment, prices, operating plan, etc.

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giving as many as 70 changes a week. The signals are coordinated with those on the first intersecting street to provide uninterrupted traffic flow.

The entire underpass project was designed and built jointly by the city, state, and Federal governments and the Union Terminal Co.

C. B. BECHENBACH,
Traffic Engineer.

A Merrier Christmas Through Fire Prevention

MINNEAPOLIS, MINN.—For the past five years the Minneapolis Civic & Commerce Association (analogous to the Chamber of Commerce in most cities) and the Fire Prevention Bureau of the Minneapolis Fire Department have staged a campaign to place on every Christmas tree a red tag carrying suggestions for fire prevention. The actual work of tagging has been done by the Boy Scouts as a civic good turn. Patrols call on each vendor of trees, present a letter from the Fire Department requesting cooperation, and then and there affix the tags.

Since vendors must be licensed, their names, addresses and the number of trees to be handled are readily ascertainable from License Bureau records. The tags are bought by the Civic & Commerce Association and delivered to the Boy Scout headquarters for distribution to patrols.

The tags are made of stout, bright red stock with a reinforced eyelet and an ample length of wire. The copy reads as follows:

GUARD AGAINST CHRISTMAS FIRES

Avoid lighted candles in the decoration of the tree.

Use carefully wired electric lights.

Place tree a safe distance from stove or fireplace.

Use a metal tinsel for trim, and mica or flake asbestos for imitation snow.

Cotton trimming and cotton-whiskered Santa Clauses are VERY DANGEROUS. Santa suits and whiskers can be made fire-resistant. Consult your insurance man about this.

Never leave lighted Christmas trees unguarded.

Do not place the tree where it will obstruct any room exit.

Keep candles and open lights away from window curtains, paper wreaths and Christmas bells.

REMOVE THE TREE FROM THE HOUSE BEFORE IT BECOMES DRY.

Issued by the
FIRE PREVENTION COMMITTEE
of the Minneapolis Civic & Commerce Association

San Mateo County's Land-Acquisition Program

SAN MATEO, CALIF.—More than 16,000 feet of beach frontage has already been acquired by the land agent of San Mateo County, since his appointment in April, 1935, and negotiations are now under way for the purchase of five miles more of such property out of the county's land-acquisition fund.

This activity has been made possible by a provision of the San Mateo County Charter, in effect in 1933, which established a County Planning Commission and set up procedures designed to make plans effective. Most California cities and counties have been unable to accomplish anything effective in the way of acquiring recreational areas, particularly beach lands. San Mateo County has a coast line of high scenic value, with many beaches usable for active recreation. The adjacent territory is lightly developed and beach frontage lands are of relatively low value. The county was determined to take advantage of this condition and the opportunity for purchase at favorable prices rather than waiting until increased development and prices should make it impossible to effectuate the acquisition plans on any scale worthy of the need and the opportunity.

Hence the provision for a land-acquisition fund, in order that land purchase might be a part of current annual expenditure rather than await the uncertainty of bond issues. The ability even to submit the question of a bond issue depends upon an acute public consciousness of need, and this generally arises as a result of intensive development with its corresponding increases in land values. By sole reliance upon bond issues for beach acquisition, a community loses many opportunities for purchase at any price, and finds its program far more costly in three ways: first, by the enormous increase in prices which generally precedes a realization of need sufficient to secure approval of the bond issue; second, by inability to make favorable purchases through the quiet negotiation which are possible with a continuing program of acquisition with smaller funds available at any one time; and, third, through the interest charges on bond issues.

The annual county budget includes an appropriation to the land-acquisition fund as required by the county charter. For the first two years during which this was in operation, the appropriation equaled approximately the amount that would be derived from a tax rate of 1 cent per $100 of assessed valuation. The third year is now under way, with an appropriation of about double that amount. The county employs a land agent, who works under the immediate direction of the Recreation Commission. Back of the purchase program is a definite plan of recreation areas, which is a part of the master plan of the county, prepared by the Planning Commission and approved by the Board of Supervisors. The general program of acquisition, based on this plan, is determined jointly by the Planning Commission and the Recreation Commission. The procedure in making purchases is for the Planning Commission to recommend that the Board of Supervisors authorize the purchase of a specific area. Upon approval by the Board, the Recreation Commission, through the land agent, undertakes negotiations, and each purchase is finally consummated by the Board of Supervisors in the same manner as any other land purchase, after approval of each specific deal by the Recreation Commission. Upon acquisition, plans for improvement of the areas are made by the Planning Commission, and their administration is under the jurisdiction of the Recreation Commission.

To date, purchase has been made by this method of negotiation in every case, no resort having yet been made to eminent domain, although condemnation will be used if necessary. The total prices asked for the 16,000 feet of beach frontage exceeded $65,800. The prices paid, including the prices to be paid under certain options, total $25,600. The saving of over $40,000 has been the result of the careful negotiations conducted by the land agent.

HUGH R. POMEROY,
Planning Advisor.

Station Billboards Successfully Boycotted

GREAT NECK, L. I., N. Y.—Late in September the Long Island Railroad (a subsidiary of the Pennsylvania Railroad) authorized an advertising agency to erect small billboards (poster panels) upon the exterior walls of its station at Great Neck. The village is largely residential, being zoned about 95 per cent for residences and about 5 per cent for business. The railroad station is in a good business area, and is generally regarded as perhaps the most artistic station on Long Island. When the station was built, a public-spirited citizen of Great Neck, William S. Barstow, added about $35,000 to the public and railroad funds available, in order to get the station built according to the special plans made for it, and the Great Neck Garden Club and other organizations contributed a substantial sum in order to provide the landscaping for the station.

Certain neighboring stations, like Kew Gardens and Forest Hills, have no advertising on their platforms, and the residents of Great Neck especially resented the cheapening effect of the boards at the railroad gateway to their community. Thereupon, under the leadership of the Great Neck Real Estate Board, appeals to the railroad having failed, the residents decided to resort to their only remedy left—boycott.

On October 2 the following pledge was widely distributed:

WE PLEDGE OURSELVES and the members of our family, as well as friends we can influence, not to buy any commodity advertised on the concrete walls of the Great Neck station of the Long Island Railroad as long as the advertising signs and posters continue to mar and disfigure the most beautiful station on Long Island.

Five days later, on October 7, every board on the station had been removed and the walls restored to their original condition. Leaders in the movement say that the signatures obtained before the boards came down represented at least two-thirds of the families in the village.

Not only were the signs on the station walls removed, although the campaign had been directed against these alone, but also larger and more aggressive boards near the station and adjoining a bus parking space have since been removed—all, obviously, under the orders of the Long Island Railroad, in deference to the local sentiment thus effectively organized.

The leadership of the Great Neck Real Estate Board in the preservation of the

Control MEANS

PERFECT TIMING

CONTROLLED IGNITION—REGARDLESS OF VARIATIONS IN DIESEL FUEL OILS . . .

The ignition point in Allis-Chalmers Oil Tractors is definitely controlled and accurately timed. This exclusive feature not only assures smoother operation and more responsive performance . . . it also gives you a wider choice of Diesel fuel oils. Controlled spark ignition enables Allis-Chalmers Oil Tractors to burn any good grade of clean Diesel fuel. Their performance is not limited by the self-combustion properties of different grades of fuel . . . a definite advantage under actual job conditions.

Neither is it necessary to use a special grade of lubricating oil. The spark ignition engine operates with normal compression pressures . . . and without excessive heat. Contamination and breaking down of lubricants is no problem.

For the first time . . . flexibility, balance, smoothness and instant starting have been combined with Diesel fuel oil economy. Investigate now!

During the 1936 storm crises, Wisconsin public officials chose A-C's at a ratio of 8 to 1 over all other makes.

CONTROLLED IGNITION OIL TRACTORS
TRACK-TYPE AND WHEEL TYPE TRACTORS
SINGLE AND TANDEM DRIVE SPEED PATROLS
POWER AND HAND CONTROLLED BLADE GRADERS
POWER UNITS • HAULING UNITS

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Branch House and Dealer Service Everywhere

ALLIS-CHALMERS TRACTOR DIVISION—MILWAUKEE, U. S. A.

Controlled Ignition **OIL TRACTORS**

amenity of its community is somewhat unusual, and the movement indicates an understanding among business men and citizens generally of the fact that beauty is a valuable commercial asset to the village. The Real Estate Board gives much credit for the success of its campaign to the initiative and cooperation of the *Great Neck News*, a local journal, which ably abetted and publicized the campaign. Before taking its action, the Real Estate Board had the advice of counsel that its proposed course was strictly legal.

ALBERT S. BARD.

Beneficial Effects of Rural Zoning

COUNTY zoning, present-day method employed to control the use of rural land in the interests of public welfare, is creating a beneficial effect on the locality of its first trial — northern Wisconsin. Better provision for public health and more economical school service are two results of the three-year-old movement, according to a report received by the American Society of Planning Officials.

The 23 Wisconsin counties which have enacted rural zoning ordinances have now restricted some 5,000,000 acres of land against agricultural development and legal settlement. They are used instead as forestry and recreation areas.

Many of the zoned counties have already adopted vigorous programs for the demolition of all abandoned buildings on county-owned lands, says the report. Private landowners have followed the policy voluntarily and are dismantling unused buildings on their properties.

Isolated settlers are being moved. A number of the counties, on their own initiative and with their own funds, have assisted individual families to relocate. One town which originally had a total population of seven families and one hermit will now consist solely of the hermit, the families having been relocated and the lands added to the county forest, which already covered three-fourths of the area.

In the towns of Three Lakes and Pine Lake in Oneida County, consolidation of schools has taken place. Three Lakes now operates one school instead of six; Pine Lake, one instead of five.

Within the last three years, the report points out, many families have been prevented from purchasing or, in some cases, merely taking squatters' rights on isolated lands in these northern counties where health service and good roads and schools were frequently out of the question because of the excessive per capita cost. They have been forced to secure land in the unrestricted district "where their opportunity for obtaining good farm land close to schools, neighbors, community centers and markets is infinitely better. . . . Studies made and plans developed during the past several years by state and county agencies indicate that there are real possibilities in a voluntary and wisely-planned relocation program. Economies in road, school, public health and relief costs are the direct and immediate results of such a program to the towns, counties, and the state. Improved citizenship and improved morale are the less visible but vitally important consequences of relocation work."

The Use of Outdoor Swimming Pools as Skating Rinks

WITH the coming of the winter season, the swimmer and the tennis player must change his field of active sport to the skating rink. Ice skating is a mysterious and difficult operation to the average Southerner, but to those who experience a winter's cold of some degrees below freezing, it is an exceedingly popular sport. Nature herself provides the skating rink in a great many of our smaller towns, natural lakes and rivers freezing over as the season comes. But in some towns which are not endowed with natural bodies of water, the clamoring of the enthusiastic skater must be answered by the flooding of some artificial area designated by the authorities.

Sometimes tennis courts are selected for this purpose, sometimes swimming pools. The use of the tennis court as a skating rink is a long-established custom, but the advisability of the winter use of the swimming pool for this purpose has aroused some controversy. In answer to inquiries on this subject, THE AMERICAN CITY has undertaken to gather together a number of expert opinions which should guide any local experiments.

Our own Engineering Editor discourages the idea to a great extent. He states:

"The piping is arranged for most effective use in causing a continual flow of water through a pool or for draw-and-fill usage, and may be unduly exposed in winter. For this reason the pipe should be drained in the winter, and if water is used in the pool for skating, it should be supplied through a temporary line or garden hose.

"Swimming pools are always deeper at one end than at the other. Inasmuch as pools will be usable over a larger span of time if the volume of water to be frozen is small, the ice will be considerably below the top of the pool, necessitating the construction of special steps down to the ice from the top of the pool, rather than using the regular ladder. Since the ice for skating in rinks is usually not more than three or four inches thick, there will have to be a considerable volume of water at the deep end of the pool which may or may not be frozen. Some damage may be caused to the tile or finish of walls of swimming pools by expansion of the ice.

"Other phases of the problem need consideration, such as damage to tiles by blows from skates, and possible damage to underwater lights if at a level where they might be struck."

A second opinion has been secured from Edward Schoeppe, of Alexander, Becker and Schoeppe, Inc., Philadelphia, Pa., who says:

"We have found that swimming pools are not designed for skating, and precautions must be taken to protect the pool both from the skaters and from ice that may become too thick.

"Ice skating occurs so infrequently in sections south of New York State, that it has been found impractical to open pools with the necessary attendant for

SWIMMING POOL USED AS SKATING RINK IN AURORA, ILL.

CONSIDER BEFORE YOU DECIDE BETWEEN A LIGHT DUTY

OR HEAVY DUTY DIESEL

● If for stationary service you think only of light duty, high speed engines . . . if you think a heavy duty engine is too big or too expensive for your own needs, read this statement by Fairbanks-Morse, manufacturer of *both* types of engines:

If you want an engine that will be lower in over-all cost . . . if you want an engine capable of continuous duty service . . . consider the F-M Model "32" . . . a heavy duty engine for today's light loads . . . and the heavy duty service of tomorrow.

With their 2-cycle simplicity which eliminates cylinder head valves, F-M Model "32" engines do not have peak and valley efficiencies. With their backflow scavenging, they burn fuel with greater economy. Because they *are* heavy duty, they can be used not only on seasonal and intermittent service, but on long runs during peak operation periods.

Do not permit a mistaken idea of high first costs to keep you from getting the *facts* on the F-M Model "32" *heavy duty* Diesel. For full information, write Department N91, Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill. 34 branches at your service throughout the United States.

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the few consecutive days on which skating may occur. It was tried at the commercial pools in this city several years ago and was a distinct monetary loss.

"We believe that the large circular pools which some municipalities have constructed might be used for skating to some advantage, as the ice at the outside walls would not necessarily be more than 2 inches thick, which thickness would do no damage to the pool.

"There is too much water in the pool if brought up to the scum-gutter level to freeze very quickly. A more desirable pool for ice-forming would be one in which the water would not be more than 6 inches deep. On an ordinary skating rink the ice is about 1 inch thick."

The Hasbrouck Company, Inc., New York City, gives a much more favorable opinion, and includes some specific instructions as to how the pools must be protected:

"It is necessary that the arrangement of the piping be such that no pockets are in the lines where seepage might occur, allowing these lines to become full of water and, when a freezing condition exists, causing a fracture.

"If the pool had any tile or other surface that might be damaged, it would necessitate covering the entire area for absolute protection from steel blades and other implements that would have a tendency to deface the surface. The question of depth of water in the pool would not be given a great deal of consideration by me, for I doubt if in New York and its vicinity we would ever get more than a thickness of 14 inches of ice, and there are very few pools which have as shallow a depth of water as that.

"I should not be at all alarmed about the expansion moment of the ice, for we have always recommended that the pools which we have designed and constructed during the past 22 years be kept full of water during the winter, as it gives the walls a more nearly uniform temperature to contend with and these pools are designed to meet this uniform temperature.

"To insure a pool against cracking due to ice expansion, we definitely specify that logs of not less than 12 inches in diameter be placed in the pool on the inside face around the entire perimeter, so that when expansion occurs, the thrust is thrown into the fiber of the wood, which takes it up and does not allow it to affect the concrete. This arrangement could be carried out in large swimming pools, in which case the platform over the pool gutter and curbing could extend over the log area onto the ice, in this way allowing for the protection of the walls and the gutter areas, which might suffer from damage due to impact. It does not mean that the water must be lowered, with the exception of possibly 4 inches from the top of the pool.

"In summing up, I see no great amount of trouble which might come from the use of swimming pools for skating during the winter months, providing that the necessary precautions are taken; and these precautions should be subscribed to by someone who is thoroughly familiar with the subject and who is in a position to cope with matters of this kind. However, I do feel that where a flat surface can be flooded, it is much more satisfactory in every detail, unless the pool is unusually large. I do not in any way recommend a general statement that swimming pools should be used for skating rinks. It would be very misleading, and many people might follow such a recommendation without understanding how to take proper precautions."

Finally, a fourth opinion has been supplied by A. J. Boase, Manager of the Structural and Technical Bureau of the Portland Cement Association. In discussing concrete pools, Mr. Boase says:

"We have never had a report of any pool being damaged by using it as a skating rink. While the force exerted by the freezing of the water in a closed receptacle is tremendous, the force exerted by the ice in the swimming pool does not seem to be very great. The ice expands in a vertical direction without restraint. As ice forms gradually, it will buckle in the center of the pool as soon as horizontal pressure occurs due to freezing of a thin sheet. Owing to this progressive action and the fact that the volume of ice decreases as the temperature falls below the freezing point, I do not believe that any very great pressure is developed on the walls due to the freezing of the water.

"Another factor which reduces the effect of the lateral pressure from the ice is that the surrounding ground freezes at the same time, and consequently assists the walls in resisting any lateral force exerted by the ice.

"Where water is left in the pool during the winter, all the pipes should be drained, and special equipment, such as lights, should be protected in accordance with the manufacturer's recommendations. The drain from the gutter should be left open, so that no ice will form in the confined space of the gutter. Ordinarily, it is best to have the level of the water several inches below the gutter. However, if it is desired to flood the pool clear to the top, I can see no objection as long as the gutter is very definitely below the surface, so that any pressure exerted by ice in the gutter will be resisted by the ice from the outside.

"Wading pools with sloping sides are very suitable for use as skating rinks in the winter. Between the seasons for wading and ice skating, such pools are sometimes also used for roller skating."

In conclusion, at least one or two examples of existing swimming pool, skating rink combinations should be cited. Some fifteen years ago in Milton, Mass., a pool of a special nature was built, utilizing a natural flow of water. It is irregular in shape, its greatest length being 315 feet, and its average width being about 150 feet. Around its border are sockets which support stanchions. These project 4 feet above the water, and are of 2-inch pipe, spaced 8 feet center to center. They support the 16 x 4-inch sections of the wooden barrier which is placed about the hockey rink in winter.

Another pool which is used for skating is located in Exposition Park, Aurora, Ill. This pool was built about ten years ago and is reported to be still in very good condition. A view of this pool as a skating rink is given on page 81.

Recent City Manager Appointments

W. F. JACKA has succeeded J. H. Sanders as City Manager of Crystal Falls, Mich.

Walter Johnson has replaced L. L. Houston as City Manager of Pawhuska, Okla.

H. W. Coleman, former Manager of Kinston, N. C., Quincy, Fla., and Stevens Point, Wis., has been appointed first City Manager of Vinton, Va. His appointment became effective on October 1.

Bolivar Pagan has succeeded Jesus Benitez Castano as City Manager of San Juan, Puerto Rico.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from the October numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$1,500,000	Maryland, Emergency Certificate of Indebtedness	2.75	9.5 Avg.	1.84
1,100,000	Erie County, N. Y., Emergency Relief	2.20	5.66 Avg.	2.19
500,000	Kansas City, Kans., School	2.5	1-20 Ser.	2.20
3,600,000	Allegheny Co., Pa., Bridge and Park	2.25	1-30 Ser.	2.21
250,000	South Carolina, Sanatorium	2.75	15.5 Avg.	2.73
100,000	Manchester, N. H., Bridge	3	1-20 Ser.	2.77
103,000	Falls Church, Va., Sewer	3.25	22.23 Avg.	3.17
910,000	Everett, Wash., Water Revenue	4	10-13 O.-A.	3.64
300,000	Florence, S. C., Refunding	4.75	21 Avg.	4.75

Says the water dept. supt.

"I want water gates with operating mechanisms I can depend upon, stems that will not fail, seat and disc rings that stay tight, stuffing boxes that can be easily adjusted, and bolts and nuts that will not rust together."

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EVERY PART of the Kennedy NEWTYPE Water Gate is designed and built with one purpose—to assure dependable, trouble-free service. Stems are much stronger than required by standard A. W. W. A. specifications; the operating mechanism combines utmost simplicity, flexibility and positive action; the rings on seats and discs cannot work loose; bodies, bonnets and flanges are heavily proportioned; and all adjustable or renewable parts have special provisions for easy and speedy manipulation. You can always depend on a Kennedy NEWTYPE Water Gate to close tightly, open easily and operate dependably.

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Traffic Thoughts at the 25th National Safety Congress

"WHEN the National Safety Council," said President C. H. Watson at Atlantic City, N. J., October 5, "set a goal of a 35 per cent reduction in traffic fatalities by the end of 1940, many thought it utterly impossible of attainment. But already we are realizing the value of setting a high mark. The goal of a 35 per cent reduction is making a strong appeal to the nation, and it is proving a remarkable stimulant to the forces of safety."

On the basis of a two per cent reduction, for eight months, in automobile traffic accident deaths below 1935, R. L. Forney, chief Council statistician, estimated that deaths from this cause will drop to 36,000 for the 12 months of 1936, compared to 37,000 in 1935. He said improvement in the traffic death problem this year had been largely due to good showing in February and March, when declines of 17 and 16 per cent from the totals of the corresponding months of 1935 were reported.

Because good roads throughout the country have broken down state lines as far as the motorist is concerned, safety education and safety measures must be developed largely by the cities, said Col. John A. Cutchins, Director of Public Safety, Richmond, Va., "Uniformity in the small things which are irritating to the motorist should be attained. Regulation of traffic by lights and other mechanical means is one which may well be coordinated. Loading zones and prohibited parking spaces mightily affect business interests, and should be as nearly uniform as possible. The experiment in parking meters is an interesting one, and cities may well profit by hearing at first-hand and having an opportunity to question the representatives of other cities which have tried this particular experiment."

Stating that the matter of safety education is greatly misunderstood, William C. Knoelk, of Milwaukee, General Chairman of the Street and Highway Traffic Section, said that most drivers must be inspired to assume the responsibilities of driving safely, without the fear or threat of impending enforcements, through an understanding teaching process.

Road Design Not at Fault

Ernst Lieberman, Chief Engineer for the Illinois Division of Highways, stated that "a study of the causes of rural accidents reveals that the greatest proportion of them cannot be attributed to the roadways." During the first eight months of 1936, about one-third of all traffic accident deaths occurred in strictly rural areas, and in 1935 two-thirds, or 25,000, of the 37,000 total of fatalities occurred in cities of less than 10,000 population and in rural areas. "Statistical studies of conditions that caused these accidents," he said, "show definitely that while some were due to poor road design, the driver and pedestrian were chargeable with responsibility for most of them. Consequently, it is essential that we develop a program directed toward users of the highways."

"In 1935, motor accident deaths," said Ellsworth Francisco, in charge of Newark's street lighting, "occurring between 6 P.M. and 6 A.M., totaled 21,480, compared to 14,620 between 6 A.M. and 6 P.M. If the same conditions of visibility prevailed on streets and highways throughout the 24 hours of the day night-time accident fatalities would not exceed daytime fatalities, as at present, especially when we take into consideration the reduced volume of traffic that uses the roadways after dark."

E. F. Copell, Traffic Engineer of the Massachusetts Department of Public Works, said the proposal to build sidewalks along highways is opposed by those who argue that "the expense of building rural sidewalks would be ridiculously prohibitive," but pointed out that Massachusetts was successful in securing a $4,000,000 bond issue for rural sidewalks, an amount, he said, that was matched by the Federal Government. "Following a survey of pedestrian accidents on all Massachusetts highways over a period of two years," he continued, "we began the construction of these sidewalks. When the work is completed, we shall have 400 miles of sidewalks skirting the most hazardous stretches of state highways."

What's a Safety Zone?

Street-car safety zones fortified by "meat block" abutments and concrete battleship prows were condemned and defended. T. J. Seburn, City Traffic Engineer of Kansas City, held that ends of safety zones should be "veritable fortresses" that will "absolutely prevent the motor vehicle from entering the reserved area—particularly on streets where traffic congestion is not great and vehicles are able to move at unrestricted speeds." Ample protection for the pedestrian using the zone had been accomplished in Kansas City by use of raised platforms, pipe stanchions and concrete ends. To ease the "inevitable crash" for the disorderly or unfortunate driver, he recommended streamlining the approach to the abutment with a gradual, "ridged" incline that would deflect an automobile before it reached the abutment, or catch the front axle of the car on the "ridge" and skid it into the crash at reduced speed. He insisted that any type of zone should be well marked and lighted.

Howard F. Ilgner, Chairman and Engineer of the Milwaukee Traffic Safety Commission, spoke for a zone or island with an approach marked off only by lines painted on the pavement, or metal "mushroom" buttons. "The 'bumperless' safety island," he said, "has fulfilled all Milwaukee's requirements for protection of pedestrians without endangering the automobile driver. We have found that painted lines or rows of metal buttons that converge about 25 feet from the end of the island will channelize motor traffic around the zone. The island itself is a concrete platform raised a few inches above the street level. We have had no fatalities either to motorists or to pedestrians standing on these islands that resulted from automobiles running into or 'climbing' them. For Milwaukee to go farther than this to make safety zones impregnable would be unreasonable, in spite of recommendations for concrete abutments, substantial posts, battleship prows and so forth." He agreed with Mr. Seburn that every precaution should be taken to identify any island with proper markings and lights.

Scholars at Work

Prof. John S. Crandall of the University of Illinois Department of Highway Engineering said that the street and highway traffic safety problem was rapping at the doors of university classrooms and laboratories. "The traffic accident," he said, "has become a specimen for psychological dissection and the measurement of exact sciences. With higher speeds and more congestion, traffic has jumped the control of lay ministrations and exhortations to 'drive carefully.' Students of engineering and human behavior, toiling in American colleges and universities, more and more will become an influence in framing municipal and state traffic-control programs. From them will come the recipes for future street and highway design, traffic signs and signals and for haltering fast-moving traffic and instructing automobile drivers."

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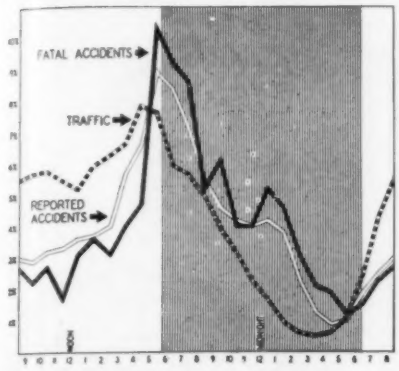
During November we hope you will remember to mention THE AMERICAN CITY

Deaths in the Dark

IN ILLINOIS

THE April Safety Bulletin of the Illinois Division of Highways shows that from August 1, 1935, through February, 1936,

DAYLIGHT vs. DARKNESS



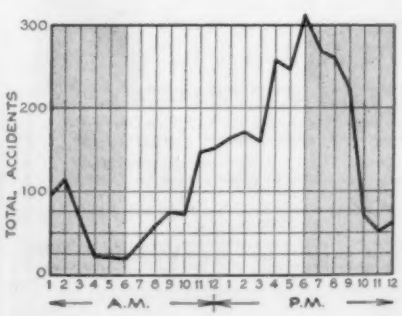
the first seven months of compulsory reporting, there were reports of 8,227 accidents received, of which 1,240 were fatal and 6,987 resulted in personal injury. Of these accidents, 58 per cent occurred during dusk and darkness, which normally fell between the hours of 6 P. M. and 6 A. M. Two-thirds of all the fatal accidents occurred during that period of time.

As seen from the above chart, the percentage of accidents remained less than the percentage of traffic from about 6 A. M. until the maximum traffic peak was reached, which occurred about 5 P. M. After that time, accidents became more prevalent as traffic declined, which showed that night driving was the most dangerous.

Between the hours of 7 to 11 A. M. the four rush hours of the morning, representing 21.3 per cent of the average daily traffic, only 10 per cent of the total fatal accidents occurred; while during the four rush hours of the evening, between 5 and 9 P. M., representing 27.8 per cent of traffic, 33 per cent of the fatal accidents occurred. Midnight and the early morning traffic, although representing only 3.2 per cent of the total traffic volume, is charged with 13 per cent of the fatal accidents. At 9 A. M., the highways were, therefore, eight times safer than at 1 A. M.

IN RHODE ISLAND

The chart below shows the number of injury accidents as they happened hour by hour in 1935 in the state of Rhode Island. The totals are 84 killed and 3,368 injured, a grand total of 3,452. More than half were pedestrians.



Of the 4,008 drivers involved in these accidents, 821, or 18 per cent, had been in other accidents, of which 19 were fatal. In other words, these 800-odd drivers who last year killed 89 persons had already killed 19 persons.

Between the hours of 6 P. M. and 6 A. M. there were 1,570 accidents, including 52 deaths. These figures correspond to 45 per cent and 62 per cent of the totals.

Traffic Engineering Education

ONE of the greatest tragedies in connection with the problem of traffic accidents and congestion is that comparatively few cities have employed traffic engineers, or even realize that there is an essentially engineering problem involved. The cooperation of engineers and police is needed, and both should have special training in traffic matters. The need for such training has been recognized and met by the engineering colleges.

As early as 1920 the University of Michigan established a course called "Highway Transport Legislation and Traffic Regulations," and in 1922 the University of Pittsburgh initiated a highway transport course about one-third of which was later devoted to traffic engineering. In 1924 the University of Michigan added a two-hour graduate course in "Traffic Engineering and Its Applications to Street Design and City Planning." The Bureau for Street Traffic Research was established at Harvard University in 1926, and various other universities and colleges have since inaugurated traffic engineering instruction and research.

In 1932 a survey of traffic education was made by a committee of the Institute of Traffic Engineers and it was found that four schools offered separate courses in traffic engineering, while about 25 others gave instruction along those lines in connection with other courses.

In addition to research and instruction of regular students, several universities have sponsored traffic meetings of various kinds for the benefit of police officials and others engaged in traffic control work. In 1927 one session of the annual Michigan Highway Conference was devoted to traffic subjects. This plan was followed for five years, and then the time was increased from one session to a whole day. This year a three-day Police Institute on traffic was held in addition to the Highway Conference meetings.

For several years Northwestern University has held an annual Police Traffic School, which has drawn attendance from a number of states, and this summer Iowa State College and the University of Alabama have held similar meetings. Purdue University has stressed traffic safety in extension work.

With increased general interest in traffic problems, there is no doubt that the engineering colleges will continue to do their part, and I hope that we may look forward to a day when every important city and county, and every state, will have a traffic engineering staff recruited from men with special education for such work.

ROGER L. MORRISON,
Professor of Highway Engineering and Highway Transport, University of Michigan.

"Steadyflow" Influences Highway Design

"WHILE departing in many important details from ordinary present-day practice, the principles set forth in Fritz Malcher's recently published 'Steadyflow Traffic System' are but the ultimate development toward which highway design has been trending for many years. In the final analysis, the most useful and practical of the steadyflow designs are simply a modified combination of the best features of traffic circles and channelization."

The paragraph above is an extract from the report of the Committee on Street Traffic read by William R. McConochie, Traffic Engineer of the Chicago Surface Lines, at the recent convention of the American Transit Association.

Enlightened Enforcement

EXPERIENCE in communities, large and small, as well as in states, has indicated beyond any doubt that intelligent enforcement is the most effective answer to the accident prevention problem. I would warn you that enforcement does not mean a wholesale arrest of motorists. It is rather the intelligent selection of those violators who obviously are indifferent to the rights of others and who purposely and deliberately violate our laws and regulations. I am sure that group is a very small minority, and it is up to you as police officers to use good judgment in differentiating between the unintentional violator and the person who wilfully disregards the law. On that small minority we must clamp down unmercifully.

But I would have you realize that there is another phase of enforcement, and that is through courteously warning and cautioning and pointing out to the unintentional violator his responsibility and the mistake or offense which he has committed. Probably more can be done to improve the driving on our streets and highways through intelligent action of this kind on the part of the police than by arrest and prosecution—these should be reserved for the minority of flagrant violators. Through courteous warning, through advice and counsel, the police can do more to improve driving on our streets than in any other way; and they can make more friends for the Police Department and enlist more public support for its activities than in any other way.

GEORGE C. TRAVER,
Manager, Chicago Safety Council.

—From an address to the Chicago Park District Police.

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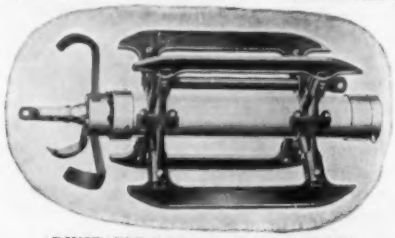

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Streets—Official Map

NEW YORK.—*Matter of Caperton*, Supreme Court, Nassau County, reported in *New York Law Journal*, July 16, 1936.—The petitioner Caperton is the owner of an interest in a piece of land in the village of Lawrence, Nassau County. The village, pursuant to article 12-A of the General Municipal Law, has created a Planning Commission, and adopted an official map. Thereafter the Planning Commission approved a street layout running through the Caperton property, which, the village asserts, became part of the official map.

The petitioner in this action asks for a peremptory mandamus directing the trustees of the village to revoke the resolution which added the street to the official map. The village has taken no steps to condemn and pay for the land for the street, and the petitioner claims to be illegally deprived of his property in that he is prevented from using it for housing or such other development as he sees fit.

The Court says in its opinion that the ordinance was unreasonable and oppressive, as claimed by the petitioner; but holds that he cannot obtain relief by mandamus, but must seek his relief in some other form.

EDITOR'S NOTE.—The Planning Commission of the village of Lawrence was appointed under Article 12-A of the General Municipal Law of the State of New York. That law does not empower the village to employ the official map procedure. The later law (1926, ch. 719, now Village Law, Sec. 179 e-q) however, provides that the Planning Commission, appointed under the earlier law, may be given that power by an appropriate vote of the village trustees. It would seem from the opinion of the Court that the trustees of the village of Lawrence had passed such a vote, and could adopt and amend an official map, as they did in this case. The Court refers to the Headley case below.

NEW YORK.—*Headley v. City of Rochester*, 247 App. Div. 562 (May 6, 1936).—This is an appeal from a decision of the Supreme Court in this case, which was summarized in these Notes for April, 1936. Under Ch. 690 of the laws of 1926, the city had adopted an official map, and by amendment of this map placed a line, on plaintiff's property, abutting on mapped streets, showing a widening of these streets. No compensation was paid the plaintiff, and no proceeding had been begun for the taking of any interest in his land. The plaintiff claimed that this was an unconstitutional taking of his property; but the lower court held that it was not a taking, but a reasonable police regulation.

For a fuller statement of the case, and a note on the law, see the April, 1926, Notes, above referred to.

On this appeal, the Appellate Division reversed the lower court. It holds that the city is attempting to take the property of the plaintiff, burdening it with a restriction to facilitate future street widening.

The case has been carried to the Court of Appeals, the highest court in the state, and the decision there is awaited with great interest.

Theater License

NEW YORK.—*Matter of Henry Phipps Estate*, Supreme Court, reported in *New York Law Journal*, July 3, 1936, p. 35.*

The Court ruled that petitioner proved conclusively that Madison Avenue above and below 62nd Street, and mostly if not all of the side streets above and below, as well as 62nd Street itself, have become thoroughfares almost exclusively devoted to wholesale and retail commercial business; that there are hardly a dozen residences on Madison Avenue from 42d Street to 72d Street. The Court granted the application of the petitioner for an order requiring the approval of the site at the northeast corner of Madison Avenue and 62d Street for a theater on the ground that such use is entirely reasonable, fit, suitable and proper for that neighborhood, and that opposition to the application is simply an effort to stay the inevitable.

The case is now before the Appellate Division.

NEW YORK.—*Matter of Goelet*, Supreme Court, reported in *New York Law Journal*, August 1, 1936, p. 307.*

This was an application to the Commissioner of Licenses for a peremptory mandamus to compel a permit for a motion picture theater at 61 East 53d Street, in Manhattan. It is intended that the theater is to be located approximately 80 feet from the Park Avenue building line, and to be accessible from Park Avenue through a promenade 20 feet wide with show windows on both sides extending 18 feet from Park Avenue building line. A hearing was held at which the opposition of residents and owners of business interests on Park Avenue was overwhelming.

The Court held that the argument that the theater would be in a legalized retail center was sound but not well taken when used to combat the exercise of the Commissioner's discretion in refusing the permit.

Park Avenue above the Grand Central district and extending for two miles or more above that has become one of the finest residential avenues in the world. In 1929, against a certain amount of opposition, the zoning map was altered so as to permit the section below 59th Street to be devoted to retail store uses, with the idea of affording an opportunity for developing that portion of the avenue with a shopping district that would rival the famous Rue de la Paix of Paris. The consensus at the hearing held before the Commissioner seemed to be that the establishment of a motion picture theater would retard any such development.

Whether it would or not, the Court ruled that the Commissioner had given careful consideration to the question, and his determination was not arbitrary, tyrannical or capricious and should not be controlled by mandamus; and, further, the careful exercise of discretion by the Commissioner would not be interfered with by the Court. The motion was denied.

EDITOR'S NOTE.—These two cases are not zoning cases; the Commissioner of Licenses acts under a section of the charter entirely independent of the zoning sections. Nevertheless, the decisions, affecting, as they do, land uses and city construction, are of interest to the planner and the zoner. The Commissioner passes upon the fitness of a given building at a given locality for use as a theater, taking into consideration not only the exits, the material used, the plan, and other considerations bearing upon its safety for use as a theater, but the suitability of its location for that use. If the building has not already been erected, he is asked to act upon the plans in advance so as to save the proprietor the expense of useless or faulty construction.

In passing upon a license for a theater, the Commissioner, as already stated, may consider not only its safety but the suitability of its location. He cannot authorize a structure or a use not in accordance with the zoning of the district in which it is to be placed; nor is he bound to allow it there because it does conform, but must give careful consideration to that zoning as an important element, much as in some nuisance cases. For these nuisance cases, see the Pennsylvania case of *Walker v. Delaware County Trust Co.*, in our Notes for June, 1934, with editor's note referring to the other cases.

Zoning—Consent of Neighboring Property Owners

MINNESOTA.—*Leighton v. City of Minneapolis*, U. S. District Court, District of Minnesota, Fourth Division, August 17, 1936 (not reported). A Minnesota statute, authorizing cities of 50,000 inhabitants and over by ordinance to regulate height, area, and use by districts, provides that the regulations or plan to do so may be altered; such alterations to be made only after the filing of written consents of the owners of two-thirds of the real estate situated within 100 feet of the real estate affected, and a majority vote of the members of the governing body of the city.

The plaintiff Leighton is the owner of a lot in a "multiple dwelling" zone, and seeks to have it rezoned as "commercial," so that she may erect a building on it for commercial uses. The plaintiff applied to the Building Inspector for a permit to construct the proposed building, but it was refused on the ground that the property was not zoned for commercial uses; whereupon she presented an application to the City Council to rezone her

* From the Zoning Bulletin of the Regional Plan Association of New York.

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property, but the Council refused because there was not filed a written consent of the owners of two-thirds of the real estate within 100 feet of the plaintiff's lot. There is substantial evidence to justify a finding that the property would have a value for commercial uses of at least twice its present value.

The purpose of this action is to test the constitutionality of the consent clause on the grounds that it permits a taking of property without due process of law and is an unlawful delegation, to the owners of adjacent property, of legislative power. The Court, in this case, upholds the consent requirements, and cites with approval, among others, the case of *Myers v. Fortunato*, 12 Delaware Chancery Reports 374, in which that Court says:

"If the existence of the law depends upon the vote or act of the people, it is an unconstitutional delegation of legislative power; but if the law is complete in and of itself, the fact that it provides for the removal or modification of its prohibition by the act of those most affected thereby, does not make it a delegation of legislative power. Such is the test recognized by the courts in many well-considered cases. . . ."

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Non-Partisan Housing

HOPE that housing may become in this country the non-partisan matter that it has in England, is expressed by Coleman Woodbury, Executive Director of the National Association of Housing Officials, in a bulletin to members of the Association. Encouraging evidence in this direction is found in the United States, he says, in the formal recognitions of housing by the two major political party platforms.

The Democratic Party's national platform includes the following statement:

"We maintain that our people are entitled to decent, adequate housing at a price which they can afford. In the last three years the Federal Government, having saved more than 2,000,000 homes from foreclosure, has taken the first steps in our history to provide decent housing for people of meager incomes.

"We believe every encouragement should be given to the building of new homes by private enterprise, and that the Government should steadily extend its housing program toward the goal of adequate housing for those forced through economic necessities to live in unhealthy and slum conditions."

The Republican Party of New York State at its convention recently adopted this housing plank:

"We recognize the need for slum clearance initiated and executed by state and local authorities. Within the limits of a sound state financial policy, we favor public aid to provide homes for families now living in slum areas and unable otherwise to afford decent, safe, and sanitary housing."

In England since the World War, Mr. Woodbury points out, important legislation in behalf of low-rent housing has been passed by both the Conservative and the Labour parties and by Coalition governments, one of which was headed by a Liberal and the other by a Conservative prime minister. The British Housing Act of 1935 provided for a Central Housing Advisory Committee to the Ministry of Health to achieve greater continuity in housing policy and administration from one government to another.

"Sharp differences of opinion exist," he says, "as to the most effective and desirable kinds of government participation in housing, and to some extent these differences divide along party lines. Furthermore, there can be no doubt that the importance attached to housing, the motives for supporting it, and, particularly among the local authorities, the vigor with which certain policies are pursued, vary greatly from city to city and also with the political party in power.

"The most significant facts, however, are that all responsible political parties in England admit that housing is a factor of importance in the economic and social health of the country, and that they all recognize the responsibility of both local and central governments in helping to secure decent, modern living conditions for all classes of the population. In other words, assistance to housing, including the production and operation of housing by governmental agencies for families not adequately served by private or cooperative enterprise, is acknowledged to be a dignified public service, not a partisan football, nor a form of charity."

Parking Lot Economics

MORE implications than meet the casual eye lie in that modern phenomenon of cities—the parking lot, which springs up on downtown business sites following demolition of some outdated, unprofitable building. Walter H. Blucher, Executive Director of the American Society of Planning Officials, regards it as a harbinger of certain aspects of city development and change.

Writing in the current issue of *The Planner's Journal*, Mr. Blucher analyzes the parking lot situation in the city of Detroit. In 1927 Detroit had 110 privately owned parking lots in its central business district, with a total capacity of 7,720 cars; by 1933 the number of lots had increased to 265, with a total capacity of 17,251 cars; and in 1936, including downtown garages, the car-parking capacity for the section was 31,724.

Aside from the provision of more parking space so that more people can go downtown in their automobiles instead of using other means of mass transportation, Mr. Blucher sees in this growing number of parking lots significant economic and physical effects on the city.

"Much of the land in the downtown sections of our cities is over-valued," he says. "Uses for buildings cannot be found that will justify a capitalization of the anticipated land value. Property owners are content to leave their land vacant, getting some income, if not enough to pay all, then at least part, of the taxes, while they await the day when through some heaven-sent action they can improve their property to the point where it will show a return on the fictitious value."

That day may never come, however, he explains, in view of the present tendencies of city growth. Instead, failure to use the land may result in a fall in property prices in the downtown sections of the cities where they have been highest.

Other cities bear out the findings in Detroit. Milwaukee in 1927 could park 3,080 cars in the open-air lots; by 1935 the capacity had been increased to 9,009. In Chicago parking lots are reported "constantly invading the regions of high land values."

The influence of parking lots reaches out in many directions, Mr. Blucher comments. It affects land values, building, automobile, bus and trolley car transportation. It will influence the location and acquisition of open spaces and will also very profoundly influence the location of residential areas.

Inexpensive Hospital Care on a Group Basis

PROVISION for hospital care to fit the pocketbooks of public employees and other employee groups of small salaries is being made by many cities over the country. The plan, known as group hospitalization, has recently been adopted in Baltimore, according to the *Civil Service Assembly News Letter*.

Medical and dental societies and several hospitals of the Maryland capital have joined in a non-profit, civic enterprise to furnish hospital service on a subscription basis to public and private employee groups. The employees do not join as individuals, but become eligible for membership after a certain percentage of the workers of a group, such as school teachers of a single school, factory workers, in one factory, city hall employees, have indicated their willingness to be enrolled.

The system provides for the payment of equal and regular installments into a common fund that is used for hospital service when required. In all cases there is no interference with the services of the family doctor, since the subscriber is free to choose his own physician or surgeon. Rates range from 40 cents upward to $1.00 a month, the average being about 75 cents.

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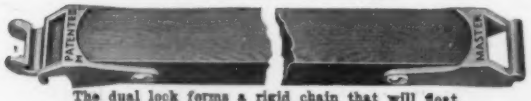

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The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City and its contractors held liable for injury to buildings due to concussion and vibration caused by use of high explosives in blasting, regardless of care used (Tenn. Court of Appeals: *City of Knoxville v. Peebles*, 87 S. W. 2d, 1022).

Increasing bid for water plant construction to cover prospective discount in sale of bonds receivable in payment held to vitiate contract as an attempted evasion of a statutory prohibition against sale of bonds below par (Oklahoma Supreme Court: *Town of Okarche v. Connelly Bros.*, 51 Pac. 2d, 955).

Bond Issues

Proceeds of bond issue for construction of pleasure grounds, parks, etc., held available for auditorium and livestock exhibition buildings (Texas Supreme Court: *Lewis v. City of Fort Worth*, 89 S. W. 2d, 975).

Tax levy limitation in force when bonds issued held to govern bondholders' rights, although limitation was later changed (Ohio Supreme Court: *State v. City of Parma*, 199 N. E. 844).

Civil Service

Clerk dismissed for absence without leave held not entitled to complain that trial was delayed 2½ years (New Jersey Supreme Court: *Stegman v. Civil Service Commission*, 182 Atl. 861).

Contracts

Partial performance held to preclude city from asserting invalidity of contract for electricity for non-compliance with charter requirement of competitive bidding (Minnesota Supreme Court: *City of Staples v. Minnesota Power & Light Co.*, 265 N. W. 58).

Council Proceedings

President of council held not entitled to vote on appointment of clerk of the council (New York Supreme Court, Appellate Division: *In re Heafy*, 285 N. Y. Supp. 188).

Council Vacancies

Under statute councilman held to have automatically vacated office by moving and voting for settlement of claim in which he and his daughters were interested (Kentucky Court of Appeals: *Napier v. Gay*, 94 S. W. 2d, 682).

Debts

City held not empowered to issue long-term vendor's lien notes to pay for airport (United States Circuit Court of Appeals, Fifth Circuit: *Phoenix Mutual Life Ins. Co. v. City of McAllen, Texas*, 82 Fed. 2d, 580).

Licenses

Statute licensing coin-operated machines held to abrogate ordinance prohibiting operation of such machines (Florida Supreme Court: *State v. McCarthy*, 166 So. 280).

Ordinance imposing $15 license fee against vehicles carrying foodstuffs held not invalid as burdening interstate commerce nor because exempting concerns having local places of business (United States Circuit Court of Appeals, Seventh Circuit: *Jewel Tea Co. v. City of Troy*, 80 Fed. 2d, 366).

Municipal Liability

Police Department property clerk's possession of money belonging to arrested person held not under control of city, and therefore Federal Government had no claim against city for clerk's failure to pay same over on demand (United States Circuit Court of Appeals, Second Circuit: *United States v. City of New York*, 82 Fed. 2d, 242).

Municipal Utilities

Light company whose franchise had expired held not entitled to enjoin construction of competing municipal plant, and contract for latter plant, under PWA, upheld (United States District Court, Western District of Oklahoma: *Interstate Power Co. v. City of Cushing*, 12 Fed. Supp. 806).

City held empowered to compete with light company operating under non-exclusive franchise and not to need certificate of convenience and necessity (United States Circuit Court of Appeals, Tenth Circuit: *West Missouri Power Co. v. City of Washington, Kan.*, 80 Fed. 2d, 420).

Office Forfeiture

Mayor held not to have forfeited office on accepting membership on Federal advisory committee (New York Supreme Court, Appellate Division: *Kingston Associates, Inc. v. La Guardia*, 285 N. Y. Supp. 19).

Officers' Liability

Police officer held guilty of actionable trespass in preventing persons from entering store operated without payment of prescribed license fee, and city commissioners held liable if they directed or encouraged the trespass (Utah Supreme Court: *Roe v. Lundstrom*, 57 Pac. 2d, 1128).

Official Misconduct

Entry into improvident contracts held not to render municipal officers criminally liable in the absence of fraud (Florida Supreme Court: *State v. Coleman*, 166 So. 221).

Pensions

Fire and police pensions held reducible because of economic necessity (California Supreme Court: *Casserly v. City of Oakland*, 56 Pac. 2d, 237).

Purchases

Fire apparatus bought by town held not subject to lien for purchase price in favor of the seller or its assignee, in absence of statutory provision for such lien (Louisiana Supreme Court: *American-LaFrance & Foamite Industries v. Town of Winnfield*, 168 So. 293).

Prisoners

Prisoner's attorney held entitled to mandamus against police department to permit consultation with prisoner detained incommunicado (Ohio Supreme Court: *State v. City of Cleveland*, 200 N. E. 840).

Recalling Officers

City auditor's determination that petition for election to recall mayor was insufficient held not controllable by mandamus, in the absence of a showing that he acted arbitrarily, fraudulently or in bad faith (South Dakota Supreme Court: *State v. Norstad*, 266 N. W. 686).

Taxation

Symphony orchestra building held not exempt from taxation as devoted to charitable use (Massachusetts Supreme Judicial Court: *Boston Symphony Orchestra v. Board of Assessors*, 1 N. E. 2d, 6).

City tax levy items held insufficiently specific (Illinois Supreme Court: *People v. Ill. Central Railroad Co.*, 198 N. E. 694).

City's claim against dealer who failed to collect sales tax held a mere debt and not such "tax" as to give the city preferred rights as a creditor of the dealer on his becoming bankrupt (United States District Court, Southern District of N. Y. *In re Goldstein*, 13 Fed. Supp. 991).

Traffic Regulations

Ordinance limiting automobile speed to three miles per hour in entering intersections not controlled by signals held traffic, not speed, regulation and hence not invalid as conflicting with statute limiting speed to 20 miles per hour (Texas Court of Civil Appeals: *Dallas Railway & Terminal Co. v. Price*, 94 S. W. 2d, 884).

Workmen's Compensation

Volunteer fireman drenched with water at fire held not entitled to statutory award for medical attention, etc., on theory of "injury" (New York Supreme Court, Appellate Division: *Trumm v. City of Long Beach*, 283 N. Y. Supp. 805).

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Public Administration

The Frontiers of Public Administration.—By John M. Gaus, Leonard D. White, and Marshall E. Dimock. The University of Chicago Press, Chicago, Ill. IX + 146 pp. $2.00.

Considering the ever-increasing administrative load which our economic problems have placed on the governments of today, we must ever be inquiring as to the adaptability of our present administrative techniques in relation to these new functions. As a basis for the study and evaluation of present administrative problems, it is necessary to clear widespread confusion and to spread an increased understanding of the fundamental nature of administration. The three authors of this new volume on the subject are well-known students in the field, and found themselves in agreement upon the value of attempting an appraisal of certain phases and concepts widely employed in the study of public administration.

Street and Highway Construction

The Annual Convention Proceedings of 1935 and 1936 of the American Road Builders' Association is intended to be of definite service to all who are engaged in improving and maintaining the nation's highways and streets. The reports published in this volume include the latest technical information and standards of practice on all types of highway surfacing and pavement construction, with illustrations; also, reports by thoroughly qualified authorities on planning, financing, administration, legislation, safety and other important problems confronting the highway construction industry. xiii + 992 pp. $10.00. (Apply to the Association, National Press Bldg., Washington, D. C.)

Engineering

A new bulletin, No. 127 of the Iowa Engineering Experiment Station, entitled "Strength and Elastic Properties of Cast Iron," has just been published. The five main sections of this report are concerned with a general description of the investigation, the strength of cast iron under combined tension and flexure, the determination of binding strength and deflection from stress-strain data, the secant moduli of elasticity, and, finally, the physical properties of cast iron and their relationships. 95 pp. (Apply to Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.)

Pensions

Thirty-five states and the District of Columbia have had their old-age assistance programs approved as meeting the requirements of the Federal Social Security Law, and can start paying benefits with the right to expect Federal grants-in-aid for administering them. To aid in organizing an efficient administrative system, the Committee on Public Administration of the Social Science Research Council has sponsored this study of "The Administration of Old Age Assistance in Three States"—the three states being Massachusetts, New Jersey, and New York, which have had their programs in effect for at least five or six years. The legal basis and history of old-age legislation in the three states is explained briefly in the first chapter. The second chapter examines the structure of the state welfare departments' old-age units, and gives details concerning the volume and cost of the programs. Supervisory activities of the states, in such matters as rule-making, appeals, organization, personnel, service program, finances, record-keeping, and research, are set forth in chapter three. Local organization, treated in detail, and general conclusions based upon the study, make up the fourth and concluding chapters. An Appendix gives a comparison of rules and regulations governing administration of old-age assistance in the states studied. 78 pp. $1.00. (Apply to Public Administration Service, 850 E. 58th St., Chicago, Ill.)

Housing

Catching Up with Housing.—By Carol Aronovici, Ph.D., lecturer on Housing and Urbanism at Columbia University and New York University; and Elizabeth McCalmont, Public Relations Department, Beneficial Management Corporation. Published by the Beneficial Management Corporation, 15 Washington St., Newark, N. J. 1936. 243 pp.

This handbook on housing is the first brief but comprehensive resumé of housing facts which has appeared to clear the mind of the layman who is confused by the flood of specialized articles which have appeared on the subject.

The second chapter, entitled "Housing Facts and Figures," summarizes the various figures available for quotation in relation to the housing problem. The third chapter outlines the many housing activities of the Federal Government. The remaining chapters deal with the essential elements in a housing program, concluding with descriptions of existing projects. There is a valuable appendix containing lists of Federal housing projects and enabling laws by states, a glossary of terms, and, finally, an extensive bibliography of the latest housing material.

Planning

Dun Laoghaire, Its History, Scenery and Development.—By Manning Robertson, F.R. I.B.A., Member of the Town Planning Institute, Town Planning Adviser to the Dun Laoghaire Borough Corporation. Obtainable from Messrs. Hely's Ltd., Dame St., Dublin. 77 pp. Illustrated. 2s. 6d.

This volume contains an interesting description of the physical features of the district of Dun Laoghaire, its history, its growth and development and its social and cultural activities. The purpose is to provide a background of material for the preparation of a planning scheme for the future development of the borough. "It is difficult to eradicate the evils of uncontrolled development in the past, except at considerable expense, but a planning scheme can secure that when the time comes for a reconstruction of existing areas the re-building operations shall harmonize with the requirements of public transport and the general welfare of the community."

The Iowa State Planning Board has completed a survey of Appanoose County, entitled "An Approach to County Planning: Appanoose County." The county is analyzed under the headings of physical characteristics, population and employment, agriculture and industry, electrification and communication, public water supply, and transportation. Existing conditions in the cities and towns of Appanoose County are also reported. In conclusion, the need for and the procedure toward planning are outlined. Maps, charts, and photographs. 111 pp. (Apply to Iowa State Planning Board, Ames, Iowa.)

Planning and Zoning

The September issue of *Pennsylvania Planning and Zoning* contains an address by Harold S. Buttenheim, Editor of THE AMERICAN CITY, entitled "The Transition Era in Planning and Zoning." He emphasizes specifically four important concerns of present-day planning. The relation of taxation to planning has received insufficient recognition, and Mr. Buttenheim points out how a land-value tax would facilitate better planning of our cities. The absurd overcrowding of land allowed by our present zoning laws is condemned, and the cultural lag in transportation planning is pictured, dominated by the ghost of a horse. Finally, the problem of our slums and blighted areas receives its due mention. In conclusion, the planning commission is urged to do everything in its power to spread the cause of rational planning. 6 pp. (Apply to Arthur A. Cassell, Sec.-Treas., Pennsylvania Association of Planning Commissioners, Allentown, Pa.)

Utilities

Electric Utilities, The Tenth Annual Debate Handbook, 1936-1937.—Edited by Bower Aly. Published by Lucas Brothers, Columbia, Mo. 2 vols. 220 + 220 pp. $1.50.

The first volume of this debate handbook consists of a number of special articles by experts, each on some phase of the electric light and power question. The pros and cons of public ownership are presented, and the lessons of TVA are cited. The second volume is a collection of reprints from books, magazines and official reports on the subject.

Government and Administration

State Government and Administration in the United States.—By Arthur W. Bromage, Associate Professor of Political Science, University of Michigan. Harper & Brothers, New York. 1936. ix + 678 pp. $3.50 from THE AMERICAN CITY.

This book is designed primarily for introductory courses in American Government in colleges and universities. Wherever American Government is taught as a full-year course, the National Government being surveyed during the first semester, this book is intended to cover the work of the second semester—namely, state and local government and administration. The old and the new aspects of Federal-state relations are presented; the governmental structure of the states; the administrative problems of the states; and the position and functions of local governments in the state. There are two special chapters on municipal government and municipal administration.

The 1936 Conference of Mayors and Other Municipal Officials of the State of New York has published its proceedings in a 143-page pamphlet entitled "Municipal Problems." Among the subjects receiving consideration are tax limitation, traffic regulation, tax foreclosure, regulation of land subdivision, blighted areas, flood control, and unemployment relief. $1.25. (Apply to Conference of Mayors and Other Municipal Officials of the State of New York, City Hall, Albany, N. Y.)

Public Works

"The First Three Years of P.W.A." is a new pamphlet published by the Public Works Administration. The pamphlet is in three sections entitled "Works," "Jobs," and "Gains." The first section describes the initiation and purpose of the Public Works Administration and outlines the general nature of the projects undertaken, giving examples of a large number of specific projects. The second section approaches the PWA from the unemployment angle, giving various statistics of employment on public works. The third and last section is an evaluation of the country's gains from the activities of the PWA, direct and indirect. 44 pp. (Apply to Government Printing Office, Washington, D. C.)

"Jobs" answers the question of whether the workers of WPA have made America a richer, better place in which to live. "Here is the achievement: Three and a half million destitute men and women taken from the humiliating futility of relief and put to work on 100,000 useful public projects of WPA and other agencies in a few short months. A great many others put to work or kept at work as a direct or indirect result of WPA occupations. The largest, swiftest reemployment program in the history of mankind." 46 pp. (Apply to Government Printing Office, Washington, D. C.)

Fire Loss

The subject of the weekly bulletin of the Civic Research Institute of Kansas City of September 10, 1936, is "Who Pays for Fires?" Shouldn't those guilty of negligence bear the burden of expense? 3 pp. (Apply to Civic Research Institute, 114 W. 10th St. Bldg., Kansas City, Mo.)

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Transportation

The Oakland City Planning Commission has made good use of WPA labor in conducting an intensive study of mass transportation. Its purpose is to furnish a background of facts which will assist in an understanding of existing conditions and future requirements of the transportation of masses of persons by public carriers. This report of the "Eastbay Mass Transportation Survey" presents the survey data in written and tabular form in Vol. I and in graphic form in Vol. II. The written presentation is in three parts: general description and history of present transportation systems; local transit services in Eastbay; and transbay service between the Eastbay and San Francisco, with a brief summary and general conclusions in addition. Vol. I, 57 pp.; Vol. II, 58 plates. $2.50. (Apply to Oakland City Planning Commission, Oakland, Calif.)

Police

The Proceedings of the Minnesota Police Training School, held in the University of Minnesota Armory May 18-22, 1936, have been published by the League of Minnesota Municipalities in an illustrated pamphlet of 81 pages. This is very live material, furnished by persons of authority and experience. The article and discussion cover many phases of police jurisdiction and procedure, among them the law of arrest; taking statements; liquor enforcement in dry territory; the flag and national etiquette; preserving evidence; firearms identification; traffic accident records; report writing. $1.00. (Apply to the League of Minnesota Municipalities, 15 University Library Bldg., Minneapolis, Minn.)

Planning

Part VI of the Master Plan of the Town of Montclair, N. J., has recently been issued, presenting "A Plan for Residential Areas," adopted June 2, 1936, by the Town Planning Board; Harold M. Lewis, Consulting Engineer, and Andre M. Faure, Town Planner. Possible improvements in the zoning ordinance are mainly dealt with, since residential problems are largely zoning problems. The obsolescence of buildings and neighborhoods is discussed and four methods of treatment are considered: tearing down and rebuilding, without change of zone; modernizing (illustrated with local photographs); rezoning single-family areas as apartment zones limited in area; group housing (illustrated by photographs of several examples in other places.) This is a progress report, showing what has been accomplished under regulations already adopted, and what is contemplated by a proposed revised ordinance, to provide for anticipated increase in population, to protect the high residential standard of a large proportion of the town, and to improve housing conditions in some areas. The Building Zone Map is included. Appendix A gives a Survey of Existing Land Uses; Appendix B, a Survey of Assessed Land Values. 48 photo offset pp. A limited supply of copies available at 10c each. (Apply to the Town Planning Board, Montclair, N. J.)

Municipal Report

Trenton has issued its first Annual Report since the adoption of the city-manager type of government on March 19, 1935. At the outset appears a short political and corporate history of Trenton. Then follow the usual department statistics, but dressed up effectively with graphs and pictures.

Recreation

The illustrations in the 8-page Information Bulletin No. 31 issued July 20, 1936, by the Regional Plan Association, Inc., 400 Madison Avenue, New York, seem to open up visions of health and fun under the title, "Swimming Pools and Bathing Beaches Open to the Public in the Metropolitan Region." A recent survey by the Association has disclosed 328 beaches, pools, lakes and streams where bathing can be enjoyed. A spot map shows the locations of those beaches and swimming pools which are open to the general public. But, since it has been shown that about 59 per cent of the total population of the Region lives within a 10-mile circle around City Hall, Manhattan, in which practically all the recreational waters are polluted, the matter of transportation is a large factor in the problem of beach bathing; and facilities must be provided in outlying communities for their own use and for the use of those living in the central areas. The conditions, needs and possibilities involved are presented in this Bulletin. Issued from time to time. Subscription, $1.00 a year. (Apply to the Association.)

Other Reports Received

BOSTON, MASS.—Year Book of the Permanent Charity Fund, Inc., 1936. 42 pp.

CAMBRIDGE, MASS.—Annual Report of the Water Board, year ending December 31, 1935. 47 pp.

HUNTINGTON PARK, CALIF.—Annual Report, 1936. 32 pp.

OHIO.—"Comparative Statistics, Counties of Ohio." Auditor of State. 1935. 55 pp.

PASADENA, CALIF.—Annual Report, City Manager, 1935-1936. 50 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

NOVEMBER 6-7.—MINNEAPOLIS, MINN. (50)

American Water Works Association—Minnesota Section. Annual meeting. (West Hotel.) Secretary-Treasurer, Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

NOVEMBER 8-11.—OMAHA, NEBR.

National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, R. W. Nelson, Chamber of Commerce, Cincinnati, Ohio.

NOVEMBER 12-14.—AMES, IOWA.

Iowa Sewage Treatment Conference. (Iowa State College.) Secretary-Treasurer, Lindon J. Murphy, Municipal Engineer, Iowa State College, Ames, Iowa.

NOVEMBER 15-17.—TOLEDO, OHIO.

National Association of Civic Secretaries. Annual convention. (Hotel Commodore Perry.) Secretary, Miss H. Marie Dermitt, Hotel William Penn, Pittsburgh, Pa.

NOVEMBER 16-17.—TOLEDO, OHIO.

National Municipal League. Annual conference on government. Secretary, Howard P. Jones, 309 East 34th Street, New York.

NOVEMBER 16-18.—WASHINGTON, D. C. (150)

United States Conference of Mayors. Annual conference. Executive Director, Paul V. Betters, 730 Jackson Place, Washington, D. C.

NOVEMBER 17.—TOLEDO, OHIO.

Proportional Representation League. Annual meeting. (Hotel Commodore Perry.) Executive Secretary, George H. Hallett, Jr., 309 East 34th Street, New York.

NOVEMBER 18-20.—CALGARY, ALTA. (250)

Alberta Association of Municipal Districts. Annual convention. (Hotel Palliser.) Secretary, E. Pinchbeck, Spruce Grove, Alta.

NOVEMBER 18-20.—WASHINGTON, D. C. (250)

Highway Research Board of the National Research Council. Annual meeting. Director, Roy W. Crum, 2101 Constitution Avenue, Washington, D. C.

NOVEMBER 19-20.—ASBURY PARK, N. J. (800)

New Jersey State League of Municipalities. Annual convention. (Berkeley-Carteret Hotel.) Executive Secretary, S. S. Kenworthy, Trenton Trust Building, Trenton, N. J.

NOVEMBER 20-21.—NEW BRUNSWICK, N. J. (300)

New Jersey Health and Sanitary Association. Annual meeting. (Woodrow Wilson Hotel.) Secretary, Dr. Edward Guion, Box 418, Atlantic City, N. J.

NOVEMBER 22-23.—TULSA, OKLA.

Oklahoma Municipal League. Annual convention. Secretary, Frank C. Higginbotham, Norman, Okla.

NOVEMBER 30-DECEMBER 4.—NEW YORK.

American Society of Mechanical Engineers. Annual convention. Secretary, C. E. Davies, 29 West 39th Street, New York.

DECEMBER 1-2.—GLOBE, ARIZ.

Arizona Municipal League. Semi-annual meeting. Secretary, J. C. Furst, Phoenix, Ariz.

DECEMBER 1-3.—WINNIPEG, MAN. (300)

Union of Manitoba Municipalities. Annual convention. Secretary, John Spalding, Miniota, Man.

DECEMBER 4-5.—PHILADELPHIA, PA.

National Association of Housing Officials. Annual meeting. Secretary, Coleman Woodbury, 850 East 58th Street, Chicago, Ill.

DECEMBER 7-10.—SAN FRANCISCO, CALIF.

American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1220 National Press Building, Washington, D. C.

JANUARY 8-9.—BOSTON, MASS.

Massachusetts State Association of Selectmen. Annual meeting. Executive Secretary, Axel E. Zetterman, Hotel Westminster, Boston, Mass.

JANUARY 11-15.—NEW ORLEANS, LA.

American Road Builders' Association. Convention and Exhibit. Engineer-Director, Charles M. Upham, National Press Building, Washington, D. C.

JANUARY 21-23.—NEW YORK.

New York State Sewage Works Association. Annual meeting. Secretary-Treasurer, A. S. Bedell, State Department of Health, Albany, N. Y.

JANUARY 25-27.—ST. LOUIS, MO. (300)

American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, A. V. Hutchinson, 51 Madison Avenue, New York.

JANUARY 25-29.—WEST LAFAYETTE, IND. (800)

Purdue Road School. Annual school. (Purdue University.) Address: Prof. Ben H. Petty, Engineering Extension Department, Purdue University, West Lafayette, Ind.

APRIL 14-16.—MONTREAL, CANADA.

American Water Works Association—Canadian Section. Annual meeting. (Windsor Hotel.) Secretary-Treasurer, A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

JUNE 7-11.—BUFFALO, N. Y.

American Water Works Association. Annual convention. (Hotel Statler.) Acting Secretary, P. S. Wilson, 29 West 39th Street, New York.

JUNE 21-25.—MILWAUKEE, WIS.

American Institute of Electrical Engineers. Annual summer convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

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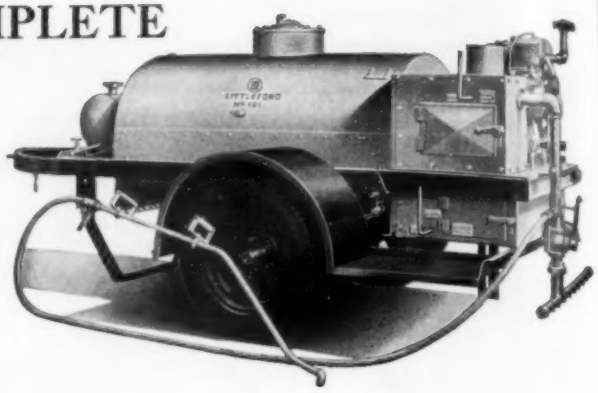

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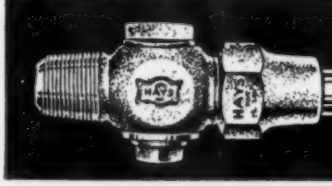

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Rock Asphalt Heaters

When using natural rock asphalt for street and highway maintenance, it is frequently advisable to heat it before laying, especially in cold weather and when handling material which has been stockpiled for some time. Heated rock asphalt can be placed in holes or on depressed surfaces much more readily than cold material, and it makes a patch which stays in place. It also assumes full compaction under roller or tamper, which is not always obtained when it is laid cold.

While rock asphalt spreads and tamps readily in warm weather without special heating, the difficulties encountered in cold weather may be eliminated by heating, thus making satisfactory repairs possible in all seasons.

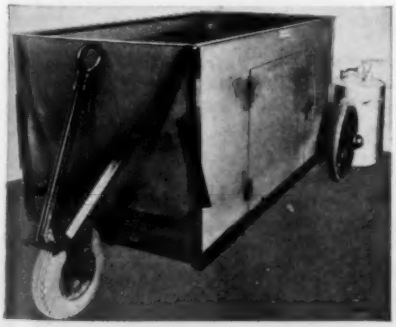
The Kentucky Rock Asphalt Institute, Louisville, Ky., and the White Manufacturing Co., Elkhart, Ind., have developed a new piece of equipment for this purpose. It consists of an all-steel box or heating chamber, mounted on wheels or plain steel skids. Near the top of the box is a heavy wire mesh screen on which the rock asphalt is dumped or loaded. Immediately under the screen is an inverted V heat deflector which prevents direct flame contact with the bituminous material.

As the material becomes warm and dry, it drops through the screen into a lower compartment. It may be necessary to stir it to break lumps or to jar the screen so that material will fall through. A large hinged door permits the warm material to be shoveled out. In cold weather, the asphalt can be kept in the box, if desired, during patching work, and the heat retained by throwing a canvas over the top of the unit.

Heat is furnished by a White self-generating burner held in a bracket at one end. Fuel is supplied from a 15-or 20-gallon kerosene tank, with hand air pump, pressure gage and safety filler cap. This torch outfit can be used for many purposes, such as drying and heating pavement to be repaired, for burning weeds, thawing catch-basins, and for similar services where a clean, voluminous flame is needed.

The heating box has four drop handles for lifting. Wheels are furnished, so that the heater can be moved around jobs or for towing at slow speeds. The wheels are quickly detachable. At the front is a towing tongue with swiveled wheel and pneumatic tire which can be removed by withdrawing the king-pin. At the rear are two cushion-tired wheels on an axle, mounted on two coiled springs. By simply lifting up the box by its handles, the axle wheels drop off.

Circular No. 29, containing complete details on this rock asphalt heater, may be secured from the White Manufacturing Co. or from the Kentucky Rock Asphalt Institute.



THE NEW WHITE HEATER FOR ROCK ASPHALT

Johnson and Evinrude Merge

Following agreements of the Board of Directors, the stockholders of the Johnson Motor Co. and Outboard Motors Corporation have voted to form a new company to be known as Outboard, Marine & Manufacturing Co. It is intended that the present competitive lines of Outboard motors, Elto-Evinrude on one hand, Johnson on the other, will be continued on a strictly competitive and independent basis not only as to sales and distribution but in respect also to design, development, construction and operating policies.

Volume of sales of both merging companies during 1936 has been materially larger than in former years. Not only has there been greatly increased buying in outboard motors, but other products such as the Lawn-Boy power lawn mower, and the engine-driven centrifugal pumps manufactured in the Milwaukee plant, and the Johnson Iron Horse industrial type engine and Jomoco refrigeration units manufactured at Waukegan, have likewise been increasingly popular.

Arthur G. Hayden Opens Consulting Office

Arthur G. Hayden, M. Am. Soc. C. E., who has resigned as Designing Engineer of Bridges for the Westchester County Park Commission, White Plains, N. Y., has opened a consulting office at Room 1906, 347 Madison Avenue, New York. Mr. Hayden's services as a consultant in preliminary investigation, design, estimates and reports for grade-separation projects, including their bridge structures, are available to state highway departments, county departments and municipalities. He and his staff are prepared to assume full responsible charge of projects of this nature from inception to completion, including supervision of construction.

Mr. Hayden developed the design and construction of the rigid frame bridge, a new structured type having distinct advantages in point of economy and adaptability to architectural treatment. Rigid frame construction also has been applied with economy to the roofing of large areas for auditoriums, industrial buildings, etc.; the omission of trusses adding beauty to the structures, improving lighting and eliminating waste space and encroaching obstructions.

WORKMEN COMPLETING INSTALLATION OF DRESSER COUPLING ON 60-INCH STEEL PIPE FOR BIRMINGHAM, ALA., INDUSTRIAL WATER-SUPPLY LINE

New Short 1½-Ton Truck with Greater Load Space

A new cab-over-engine truck of 1½-ton capacity, giving greater load space with less overall length, improved load distribution and easier handling, has been announced by the International Harvester Co., Chicago, Ill. This International Model C-300 is available in 99- and 117-inch wheelbase lengths and is adapted to body lengths up to and including a maximum of 15 feet. Its design, while permitting bodies of this length, also permits a reduction in overall length over conventional units suited to the same body sizes of approximately 3 feet.

This design makes possible the ideal weight distribution of one-third on the rear and two-thirds on the front axles, resulting in more uniform tire wear on all six tires and greater braking efficiency, especially on the front wheels, owing to the increased weight of the front tires. This model also has numerous other features contributing to long life and operating economy.

USERS SAY. .

"Full flow accuracy on the sensitive test . . . . . and for a big surprise, test this meter on a 1/32-inch stream!"

ACCURACY is BUILT INTO AMERICAN and NIAGARA METERS

The design is simple. The measuring disc is 1/3 thicker to prevent slippage. Hard materials are used for long wear; these are cast and machined accurately. Each meter is correctly calibrated—tested one at a time by an employee paid on an hourly, not piecework, basis. It's totally unnecessary to retest meters on arrival when you order American or Niagara Meters!

BUFFALO METER CO.
2902 Main Street Buffalo, N. Y.

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★ ACTUAL experience has proved to hundreds of cities that American play equipment will outlast and outperform other makes. Dependable construction and finest design assures complete satisfaction. The American line is complete, send today for catalog and prices on this BETTER Playground apparatus.

★ ★ ★ ★

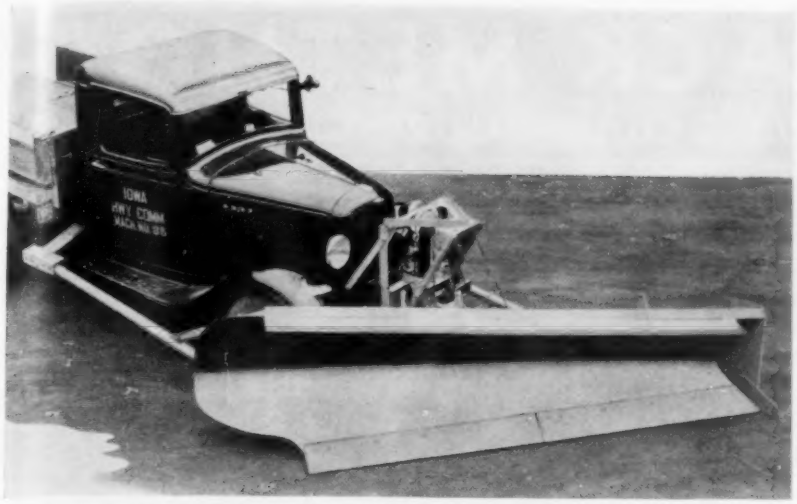
AMERICAN PLAYGROUND DEVICE CO.
ANDERSON - - - - - - - INDIANA

BAKER

Send for information on 28-year-old line of dependable Snow Plows including 21 models for trucks and heavy or light tractors. Used in 36 States.

THE BAKER MFG. CO.
503 Stanford Ave., Springfield, Ill.

SNOW PLOWS



THE NEW PARSONS ONE-WAY SNOW-PLOW WITH TRUCK MOUNTING

One-Way Plows for Light Trucks

The effective manner in which the new light one-way snow-plows made by The Parsons Co., Newton, Iowa, are attached to 1½-ton, two-wheel-drive trucks saves the trucks a lot of punishment in this severe service. The plow is not attached to the front axle nor to the front end in any way. It is supported and pushed by outside heavy push arms going back to the rear of the cab and outside the running board of the truck. This feature takes all strain off the front end and front axle of the truck. It puts the pushing of the load back near the rear wheels, where it ought to be. The truck is therefore easier to steer and control.

The plow can be raised 12 to 14 inches off the ground when traveling where the front axle attachment limit is only about 6 inches. The plow is protected by an automatic spring trip, so that if it strikes a manhole or other obstruction it relieves both itself and the truck from serious damage. This movement is entirely automatic, and the plow restores itself to working position without the operator's leaving the cab.

The light models are 12 feet long overall, 10 feet long on the edge, 2 feet high at the front end, and 3 feet high at the discharge end. They weigh, without the hoist frame, approximately 500 pounds.

Portable Irrigation for Parks and Lawns

The installation of a permanent irrigation system for city parks, golf courses and other public grounds is often too expensive for a city to consider. To overcome this, the Champion Corporation, Hammond, Ind., has created a complete portable irrigation system which can be assembled quickly at any place it is desired to irrigate and the water taken from any convenient pond or stream even a half-mile away.

The Champion irrigation system consists of light-weight welded steel pipe, galvanized after making, and equipped with a patented quick-assembling coupling that is leakproof under pressure. No wrenches or other tools are required in assembling or changing the sections. The pipes are furnished in 4-, 6- and 8-inch sizes and in 16-foot lengths. A gasoline-driven trailer mounted pump furnishes the water to the system.

On one golf course a Champion irrigation system covered the average width of fairway with about 30 revolving sprinkler heads. The river and the pump are a half-mile away from where the sprinklers were in operation. The instant-coupling pipe was laid or relaid over the course at the rate of one-half mile per hour, and the air brake type coupling withstood 100 pounds pressure without any leakage. Two men with the Champion irrigation system were able to keep the 18-hole course green during the severe drought of 1936.

Mechanical Foam

A new method of fighting inflammable-liquid fires by foam that is produced not chemically but by a mere combination of water, foam solution and air has recently been announced by the Pyrene Manufacturing Co., Newark, N. J. By this method a water stream is converted into a continuous foam stream by coupling a special nozzle to a water line at 75 pounds pressure, combining the water automatically with the right proportion of air and the foam-making solution carried by the operator in a hip pack. This system, though developed especially for use by the smaller fire departments (already purchased by such towns as Glen Cove, N. Y., Teaneck and Rutherford, N. J., Logan and Provo, Utah, and Boise, Idaho), has won the interest of larger city departments as well, because of its ease of operation and the speed of its action.

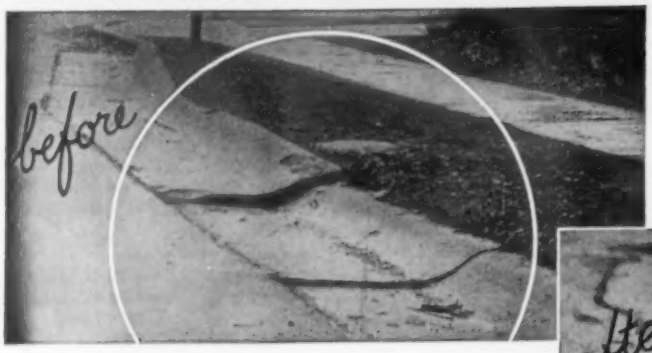
Midget Injector a Part of Moving Lab

The traveling water-works laboratory of the Activated Alum Corporation was described in the August issue of THE AMERICAN CITY. A new piece of equipment in this Lab-on-Wheels is a Midget Chlor-O-Feeder, which can accurately measure a solution, build it up to pressure, and inject it against pressure at the desired application point. Besides this function, the Midget Chlor-O-Feeder also provides driving means for operating a very small dry feeder which will deliver 4 pounds per hour or less of any dry chemical into a solution tank continuously.

Water-works officials will have an opportunity to see this equipment, installed by Proportioneers, Inc., Providence, R. I., as the touring water-works laboratory travels the country.

ONE OF THE FLEET OF AUTOCAR TRUCKS WITH REFUSE-COLLECTION BODIES HAVING KINNEAR STEEL ROLLING DOORS, USED BY THE DEPARTMENT OF PUBLIC WORKS, MT. VERNON, N. Y.

MUD-JACK METHOD
for raising concrete curb · gutter · walks · street



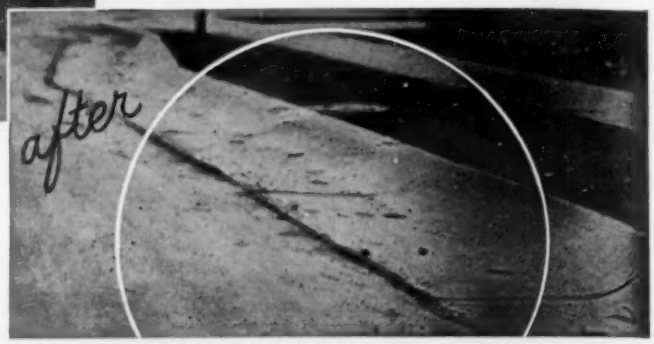
Sunken Curb and Gutter Marked for Reconstruction

but

THE MUD-JACK METHOD *corrected the settlement and saved the reconstruction costs*

Save CURB — GUTTER WALKS — STREETS

The Mud-Jack method saves the slab —corrects the subgrade—eliminates pedestrian hazards. Write for data to reduce maintenance expense.



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From 4" to 54"

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THE FIRST GLASS OFFICE BUILDING IN NEW YORK CITY

Corning Builds Glass House in New York City

New York City's first "glass house" is now under construction at 718 Fifth Avenue, where the Corning Glass Works, of Corning, N. Y., is building a new completely air-conditioned five-story office building of fireproof construction with exterior walls consisting of great screens of glass construction units framed in Indiana limestone. The New York store of Steuben Glass, Inc., art glass division of Corning Glass Works, will until completion of this new building be located at 748 Fifth Avenue, where they have been for the last three years. Corning Glass Work's New York office, which will also move to the new headquarters, is now at 501 Fifth Avenue. In the new Corning building, the glass works will for the first time display their complete line of products in one place in New York City. Displays will range from artistic handmade glass to the latest developments in industrial machine-made glassware.

Fibrous glass, a Corning product now best known for its use in the insulation of buildings, will be used throughout the interior for pipe wrappings, for air filters in the air conditioning system, and in movable partitions which will occur in places on the upper floors. Glass construction units will be used for partitions.

Increased Loading Space Available on Dodge Trucks

Increased loading space and reduced over-all length, giving greater ease of handling in traffic and maneuvering for loading, feature the new cab-over-engine conversion just announced by the Truck Sales Division of the Dodge Division, Chrysler Corporation, Detroit, Mich. The Montpelier de Luxe cab-over-engine conversion can be had on Dodge LF series 1½-ton chassis in all standard wheelbases, and can also be supplied on special wheelbases from 180 inches up. The 129½-inch wheelbase unit, for instance, offers a back-of-cab-to-rear-axle dimension of approximately 81 inches, which is recommended to accommodate a 12-foot body.

The cab has a streamline front with the roof and cab corners fully rounded. The cab sides extend straight down below the sill to the running-board line. The top of the cab is arranged with double-textured fabric deck material. The front end of the chassis is of heavy-duty construction to take care of the redistribution of load in the chassis. A heavy-duty steering gear with 18 to 1 ratio is supplied.

Light the Center Stripe for Safer Night Driving

The contribution which the center stripe has made to safer driving in daytime is immeasurable, but at night under the glare of headlights the center stripe becomes almost invisible. The Master Road Eye, a small steel drop forging, hot galvanized and equipped with ⅞-inch reflecting lenses, has been used experimentally in Arizona and extensively in California and Minnesota. The Road Eye is only 7 inches long, 4⅛ inches wide and 1¼ inches high. It therefore offers little or no obstruction to an automobile tire which might be driven over it, but the reflecting lens is a bright spot at night which clearly delineates the center stripe on which it is mounted. Installations of these reflector units on curves is particularly effective at night.

TOP VIEW OF A MASTER ROAD EYE

The Master Road Eye is self-cleaning with no projections to hold snow, ice or dirt, and is held securely in concrete roads by expansion bolts placed in holes drilled in the pavement and by 8-inch fluted spikes in black top highways and streets.

Other units with multiple lenses in red and yellow are made for use at road intersections, dead-end streets, parking spaces and street-car loading stations. Master Road Eyes are made by the Western Pipe & Steel Co., 2900 Vermont Street, Blue Island, Ill.

Non-Reversing Linestarters

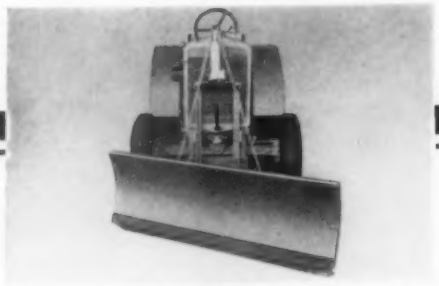
A new line of non-reversing linestarters has recently been announced by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Available in four sizes, ranging from 25 amperes to 150 amperes, they are used for across-the-line starting of squirrel-cage induction motors, and as primary switches for wound rotor induction motors. Typical applications include machine tools, pumps, fans and similar machines where control is desired from a push-button or other pilot device with complete protection to the operator, the motor and the machine.

These De-ion linestarters are compact in design, with complete accessibility and dependability. The De-ion arc quencher confines, divides, and extinguishes the arc almost instantly without flash or scattering of flame, giving not only a high degree of safety but also practically unlimited life of arc box and contacts. The vertical operation of the magnet prevents accidental closing of the contacts due to mechanical shock or tilting. Reliable motor protection is provided by a new bimetal thermal overload relay. The contactor and overload relay are mounted on a steel panel with no back-of-panel wiring, which makes the linestarters ideal for built-in applications. All parts and terminals are conveniently accessible from the front.

Snow Removal with Bulldozers

The effective bulldozer used so universally for leveling piles of earth dumped by trucks has taken its place in the field of snow removal. The Bullgrader, made by the Bucyrus-Erie Co., South Milwaukee, Wis., established its value as a snow-removal unit last winter by tackling high drifts where its hydraulically-powered blade, fast blade travel and high reach made it possible for it to clear streets and highways rapidly. In shallow drifts, the blade is angled to side-cast continuously as the tractor moves ahead, thus clearing a wide swath while the unit moves forward at full tractor speed. A special blade, larger than that used for dirt moving, is now available as snow-removal equipment with the Bullgrader.

BUCYRUS-ERIE BULLGRADER WIDENING OUT A PLOWED STREET



Sidewalk Model T-64

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SNOW PLOWS

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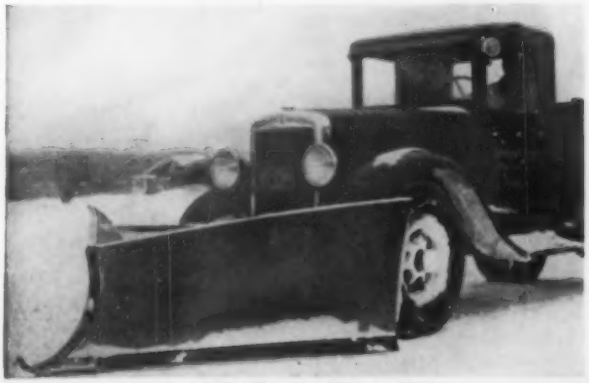

Model V-10 for 1½-Ton Trucks

THIS MACHINE WILL LOAD
SNOW

When it's **DEEP**
.....WET
.....SOGGY

or **PACKED**
..FROZEN
....HARD
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The big, powerful Haiss "27" Snow Loader is *the* machine for the heavy snow belt. Loads up to 7 yds. a minute. Digging propellers will break up frozen snowpiles. POWER plus TRACTION. *Write, wire or telephone.*

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Buy now for spring Weed-Killer needs

IN the spring, raw material prices usually go up, so Weed-Killer prices also go up. It pays to look ahead during the off-season—to buy Dolge Weed-Killer when raw material prices are low. Because you get liberal rebates. Time means money—you can make a big saving by taking prompt action. Therefore:

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Including native trees, shrubs, vines and evergreens for formal and natural planting of Parks, Private Estates, Roadsides, etc.

List and Quotations Furnished on Application

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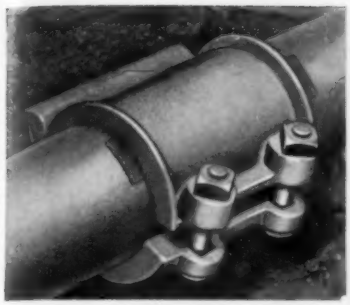


THE SKINNER PIPE CLAMP

Quickly Applied Clamps for Stopping Water Leaks

Clamps which will permanently stop leaks in water pipes and which are easily applied have been announced by the M. B. Skinner Co., 3731 West Sample Street, South Bend, Ind. No matter how large or small, or whether the pressure is high or low, these clamps can be used. The new specifications for the clamps require a metal of higher tensile strength, uniform density and hardness. To be sure that every clamp is as perfect as is humanly possible, Skinner has installed sufficient new testing apparatus to test every clamp under a pressure of 3,000 pounds before it leaves the factory. Two bolts, the two clamp sections, and the gaskets seal the leak under high pressure, making a permanent repair.

Measuring Hydrogen Sulphide at Sewage-Treatment Plants

The Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa., has developed a detector to detect hydrogen sulphide gas, which constitutes a major hazard to life and health in many industrial fields. It has been used in sewage-treatment plants to measure the amount of hydrogen sulphide present in tanks and other enclosures.

It consists essentially of an aspirator bulb, a detector tube, and a movable scale graduated to read directly in per cent of hydrogen sulphide. The actual mechanics of operation consist merely of squeezing the bulb, thus drawing gas samples through the detector tube into the rubber bulb and forcing spent samples out of the other end of the bulb.

The glass detector tube contains a white, granular chemical of predetermined quantity and grain size, held in place in the tube between two plugs of glass wool. The surface of the chemical granules reacts with any hydrogen sulphide present in the sample, and turns dark gray in color, beginning at the end where the sample enters. The length of travel of this discoloration through the granules is proportional to the per cent of hydrogen sulphide in the atmosphere under tests, and the concentration, up to 0.04 per cent, may be read directly on the graduated scale, which is calibrated to show the concentration of hydrogen sulphide with ten squeezes of the bulb.

In making the test, one of the detector tubes is broken at both ends at the scored marks, and the colored end is inserted through the tube guide at the top of the instrument into the cushioned seat ahead of the aspirator bulb. The retaining head is placed over the inlet end of the detector tube. Slight pressure with the thumb against the retaining head insures a sung fit of the tube in the seats. The thumb-nut on the back of the detector is then loosened and the sliding scale adjusted until the zero mark is opposite the beginning of the granular chemical, then the thumb-nut is tightened and the instrument is ready for making a test.

To make the test, the bulb is squeezed ten times, allowing the bulb to expand completely after each aspiration. The

USING THE MSA HYDROGEN SULPHIDE DETECTOR AT A SEWAGE-TREATMENT PLANT

per cent of hydrogen sulphide is read on the scale at the end of the discoloration in the detector tube. The inlet of each detector tube is etched for record purposes. A pencil is supplied with each instrument for use in marking the etched surface with the data of the test, after which the tube may be filed for future reference and comparison. The discoloration of the chemical has been found to persist for more than two years.

Cletrac Appoints New Advertising Manager

The Cleveland Tractor Co., Cleveland, Ohio, has announced the appointment of C. W. Garrison, formerly with the Burns-Hall Advertising Agency, as Advertising and Sales Promotion Manager. Preceding his connection with Burns-Hall, Mr. Garrison was a director and account executive of Freeze-Vogel-Crawford, a Milwaukee advertising agency, where he served a number of manufacturers of construction on industrial equipment.

Hoists and Bodies for Refuse Collection

The Hoist & Body Division, Gar Wood Industries, Inc., Detroit, Mich., has issued a bulletin, No. 12, which is an encyclopedia of bodies for garbage and rubbish collection, as it illustrates and describes Gar Wood bodies used in Baltimore, Md., St. Louis, Mo., Rochester, N. Y., Boston, Mass., Detroit, Mich., Medford, Mass., Waukegan, Ill., Waltham, Mass., San Francisco, Calif., and New York City, together with details of a wide variety of other bodies built for low mounting and to meet special conditions.

Garahan Appointed Manager of G.E. Cable Sales

S. J. Garahan has recently been appointed Manager of Sales for the Cable Section of the General Electric Co.'s central station department, Schenectady, N. Y., and R. G. Bellezza, former head of the Cable Section, has become associated with the Locke Insulator Corporation, of Baltimore, Md., as Vice-President and Manager of Sales.

Mr. Garahan entered the General Electric Co. service in 1904. In 1909 he was transferred to the Wire and Cable Department, becoming assistant to the head of the Cable Division in 1923. He was placed in charge of cable quotations in 1929 and later was appointed Assistant Manager of cable sales.

The Model 30 Hug Lugger

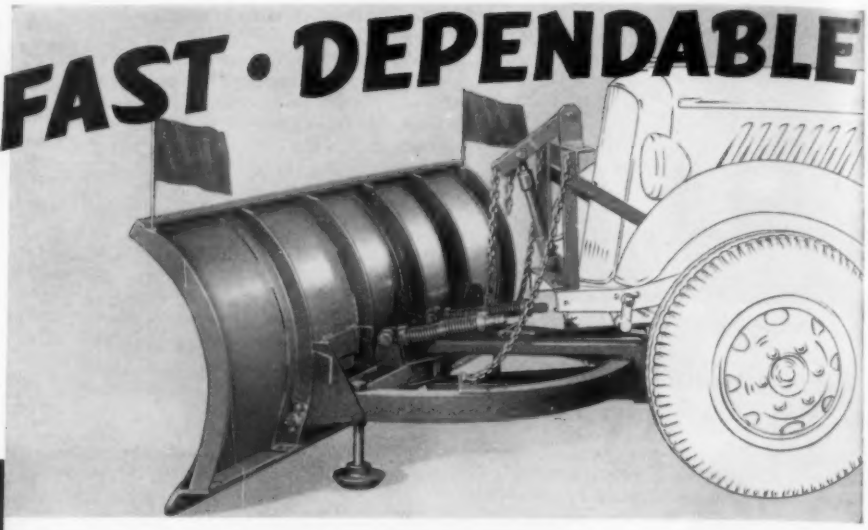
The Hug Company, Highland, Ill., has announced a new Model 30 Hug lugger powered with a Caterpillar D8800 four-cycle, water-cooled diesel engine with a displacement of 831 cubic inches and an A.M.A. rating of 52.9. The transmission provides 12 speeds forward and three reverse. The Hug setback wheel design allows short turning radius and facilitates handling.

Innovations in design and construction are incorporated in the chassis, which is entirely electrically arc welded. Trusses, spring hangers, motor hangers, radius rod braces, and box section cross members are all electrically arc welded to the side rails to form a rigid structure.

The body is the Hug scoop end body with a direct reversible high dumping angle hoist. There is no tail-gate, and the body sides are reinforced with I-beam steel ribs. The body has a capacity of 10 yards, and the maximum pay load of the unit is 30,000 pounds.

THE NEW DIESEL-POWERED HUG 10-YARD TRUCK

SAFE • FAST • DEPENDABLE



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OIL BURNERS · WATER SYSTEMS

Keep highways and byways open to winter traffic with dependable, efficient Gettelman-Heil Semicircle Blade Plows! . . . Here is a plow that has EVERYTHING—correctly curved blade—reversible cutting edge—automatic safety blade trip for safe, high-speed operation—sturdy push frame and hydraulic control. . . . Made in two sizes for mounting on any make or model of truck—write for latest bulletin—Address:

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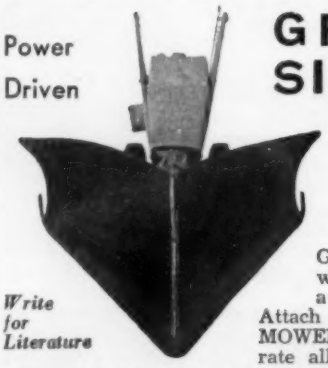

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Effectively clears paths 40-54″ wide. Goes in places you wouldn't think of taking a big plow. Attach it to your GRAVELY MOWER and you have a first-rate all-year machine.

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

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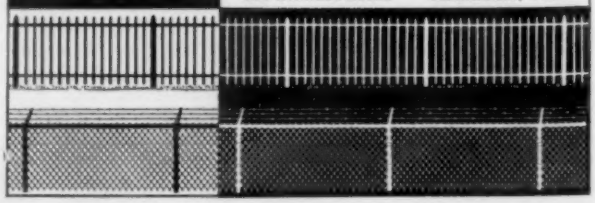
THE STEWART IRON WORKS CO., INC.
326 Stewart Block Cincinnati, Ohio



When you write for that catalog, kindly mention THE AMERICAN CITY

Modern Luminaires

The constantly increasing number of night traffic accidents directly attributed to inadequate illumination demonstrates without any doubt that street and highway illumination is not a luxury but an absolute necessity. Statistics show that curtailment in illumination for economical reasons invariably proves to be costly and even disastrous, while on the other hand each new lighting installation reduces and, in many instances, entirely eliminates night traffic accidents. Individuals and whole communities are becoming more and more illumination-conscious, with the result that the demand for street and highway lighting is rapidly increasing.

At the same time, the quality of illumination produced by various luminous sources and luminaires, taken previously for granted, is being more and more questioned, studied and analyzed.

In judging the performance of street and highway luminaires, says S. B. Kraut, Lighting Division, Westinghouse Electric & Manufacturing Co., Cleveland, Ohio, it is not sufficient to consider the total lumen output alone. Consideration must be given to the quantity of useful light produced, the directions in which the light is spread, the uniformity of illumination, and absence of objectionable glare. The most economical and scientific results are obtained when a luminaire is designed to produce a wide distribution on the roadway with a complete light cut-out at an angle close to 10 degrees below the horizontal, and when very little or no light is wasted on either side of the street or highway. Proper illumination can be obtained by the use of suitable intensity light sources, located correctly within the luminaire, by controlling the direction of light accurately into angles in which it produces the best results, by proper mounting height and spacing of luminaires.

Considering light distribution, street and highway lighting luminaires can be divided into two classes: units from which the light distribution is symmetrical; and units with asymmetric distribution of light. The former are required for the lighting of intersections, wide streets, roads or open spaces, while the latter are appropriate for the lighting of moderately wide or narrow streets. The luminaires with symmetric distribution should be mounted as close as possible to the center of the roadway and at close intervals, while the units with asymmetric distribution can be mounted close to the curb line and with greater spacings, the mounting heights being the same.

The demand for more efficient and, at the same time, economical luminaires is largely responsible for the discovery and practical application of Alzak aluminum. The high reflectivity and permanency of the finish, durability and ease of fabricating Alzak aluminum in suitable shapes and forms has opened a new field in the development of luminaires, and is filling the gap which existed between economical and efficient lighting units.

While the appearance of the luminaires does not affect their performance, the desirability of more attractive lighting units is apparent when so much attention is being paid to the beautification of streets, roadways, buildings and automobiles.

The advantages of concealed or semi-concealed light sources, especially for traffic streets and highways, have been realized for a long time, and many attempts in this direction have been made in the past. The discovery of Alzak aluminum is largely responsible for the development of the Reflectolux luminaire, in which the light center of the lamp is nearly 2 inches above the bottom of the main reflector, thus producing a sharp cut-off below the horizontal. The over-all height of the Reflectolux is 22¾ inches, and its over-all diameter is 13⅝ inches. This luminaire, produced by Westinghouse, consists essentially of canopy, reflector, globe-holding ring, and globe.

In keeping with the trend for ornamental as well as efficient street-lighting

WESTINGHOUSE REFLECTOLUX LUMINAIRE WITH CAST ALUMINUM ORNAMENT

equipment, the design of the Reflectolux canopy incorporates a modernistic decoration. Facilities for mounting a series socket and receptacle, mogul multiple or medium multiple sockets are provided inside the canopy. Where different types of circuits are operated by the same supervision, this latter arrangement materially reduces the number of parts required for stocking, and makes the appearance of the luminaires on the various circuits identical. The canopy is fitted with three pins which slide in the bayonet slots of the reflector heel.

The reflector for the Reflectolux is spun from 0.064-inch thick Alcladaluminum, following a contour carefully determined to provide the best distribution possible, aiming for theoretical uniform, non-spotted illumination on the highway and cut-off below the horizontal. Alzak finish is applied to the reflector after it is fabricated. The heel of the reflector is 5½ inches in diameter, large enough to easily clear a maximum size lamp of 10,000 lumens or 500 watts, for which the luminaire is designed. For asymmetric distribution, additional bi-flectors, made of specular Alzak aluminum, are mounted inside the main reflector, forming an integral part of it. The bi-flectors are rigidly braced to insure their proper relation and maintain desired light distribution.

The globe was designed specially for the Reflectolux and conforms to the general contour of the luminaire. It is of rectilinear design and is held to the reflector by means of a globe band, seating in a gasketed recess spun integrally with the reflector. Construction of this type produces a weatherproof seal, securely holding the globe in a strainless manner, yet permitting easy replacement of the glassware when necessary. The procedure followed when relamping or cleaning the Reflectolux luminaire is to first loosen a thumb-screw in the canopy, which unlocks the bayonet arrangement. A few degrees rotation of the reflector and globe assembly in a clockwise direction and a straight draw exposes the lamp, socket and inside of the reflector and globe for servicing.

In localities where more decorative luminaires are desired, an attractive cast aluminum ornament assembly can be added to the luminaire. This ornament assembly slides over the canopy.

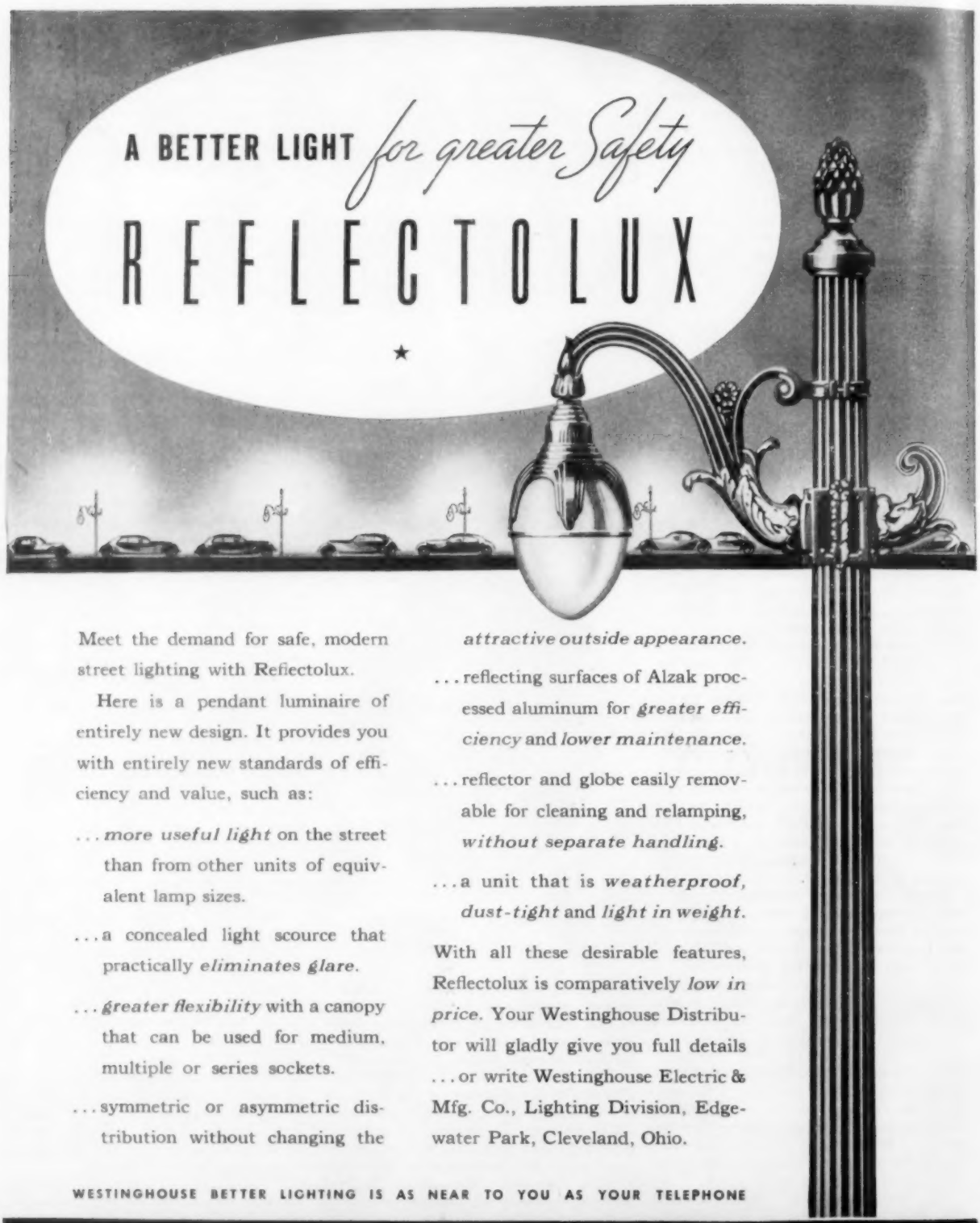
Koppers Reorganization

The name of Koppers Gas and Coke Co., Pittsburgh, Pa., has been changed to Koppers Company, and its three subsidiary companies are being dissolved and will become divisions of the parent company. These include: The Koppers Construction Co., which becomes the Engineering and Construction Division; Koppers Products Co., which becomes the Tar and Chemical Division; and The Bartlett Hayward Co., which becomes the Bartlett Hayward Division.

The Western Gas Division of The Koppers Construction Co. becomes a division of Koppers Company, as does the American Hammered Piston Ring Division of The Bartlett Hayward Co. The Maryland Drydock Co., The White Tar Co. of New Jersey, Inc., and The Wood Preserving Corporation, remain as subsidiaries of Koppers Company.

Officers of the former subsidiaries will become officers of Koppers Company. To avoid similarity of titles, the name of The Koppers Company, parent company of Koppers Company, will be changed to Koppers United Company.

Activities of Koppers Company, through its subsidiaries and divisions, include the designing, construction and operation of by-product coke plants, gas producers, tanks, holders and other gas apparatus, wood-preserving plants, and dry docks, and the production and sale of motor benzol, ammonium sulphate, naphthalene, phenol, Tarmac road materials, roofing products, tar acid oils, pitch and other coal-tar products, machinery and steel mill equipment, piston rings and packing.



Meet the demand for safe, modern street lighting with Reflectolux.

Here is a pendant luminaire of entirely new design. It provides you with entirely new standards of efficiency and value, such as:

. . . *more useful light* on the street than from other units of equivalent lamp sizes.

. . . a concealed light scource that practically *eliminates glare*.

. . . *greater flexibility* with a canopy that can be used for medium, multiple or series sockets.

. . . symmetric or asymmetric distribution without changing the *attractive outside appearance*.

. . . reflecting surfaces of Alzak processed aluminum for *greater efficiency* and *lower maintenance*.

. . . reflector and globe easily removable for cleaning and relamping, *without separate handling*.

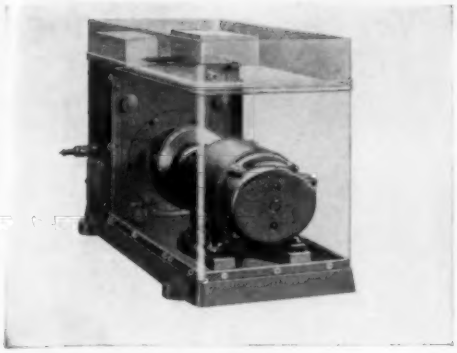
. . . a unit that is *weatherproof, dust-tight* and *light in weight*.

With all these desirable features, Reflectolux is comparatively *low in price*. Your Westinghouse Distributor will gladly give you full details . . . or write Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

WESTINGHOUSE BETTER LIGHTING IS AS NEAR TO YOU AS YOUR TELEPHONE

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse



THE NEW CHAIN BELT TRITURATOR

A New Compact Screenings Shredder

The new Rex Triturator, screenings shredder, made by Chain Belt Co., 1600 West Bruce Street, Milwaukee, Wis., is a complete compact unit for disintegrating sewage screenings. It consists of the Triturator, its motor and base, the motor housing, a feeder pan and rake with the water piping assembly and mounting, including the hose take-off and valve, and the electrical control assembly, including the starter and push-button control station. It is only necessary to connect the water and electric power line, and the unit is ready for operation.

Installed either with new or existing bar racks with hand or mechanical cleaning, the unit provides for complete screenings disposal. The clean-cut shearing action disintegrates rags, papers and all forms of organic solids so that they can be returned to the sewage flow. The work is done with very little water and very low electric current consumption. The machine delivers 350,000 blade cuts per minute, so that all screenings are uniformly reduced, leaving no stringy or large pieces of material coming from the machine. The manufacturer states that everything passing through the Rex Triturator is so completely disintegrated that it is easily removed by sedimentation and handled as primary tank sludge.

Aluminum Traffic Line for Bituminous City Streets

Traffic lines manufactured of a fine grade of strong aluminum and provided with lugs which are punched out on alternate sides of the surface to anchor the strips into bituminous city streets, are produced by Highway Steel Products Co., Chicago Heights, Ill. These Staybrite traffic lines are provided in 5-foot sections and shorter. Since they eliminate the expense of painting two to four times a year, and since there is a definite salvage value when the street is torn up, and the markers removed, the manufacturers claim that improvement of traffic conditions on city streets can be obtained through the use of these markers without an expense greater than the mere painting of the lines. The aluminum plates do not become dim as do painted lines, and they are always visible and straight. The traffic on the street does not discolor the plates, but rather tends to keep them bright at all times.

Staybrite traffic lines are installed when the street is being constructed and while the bituminous mix is still soft. They are set in place on the roadway and pressed into the asphalt mixture just before the final rolling, and are tamped down by hand until the metal is flush with the pavement. Once in place, these traffic lines remain securely imbedded in the pavement until the street itself is torn up.

Armored Concrete Curbing

The value of armored concrete at points where the wheels of heavy motor vehicles are liable to spall the concrete is unquestioned. The American Brake Shoe & Foundry Co., New York City, is now manufacturing this type of curbing, which consists of an armor of gray cast iron bonded to the concrete in such a way that no part of it can vibrate in the slightest degree. This material is not affected by impacts, abrasion, corrosion or temperature variations. The use of the armor eliminates much form work formerly necessary. It also makes a neat and pleasing appearance.

INSTALLATION OF ARMORED CONCRETE CURB ON HEAVY TRAFFIC STREET IN MT. VERNON, N. Y.

Armored concrete curbing has been successfully used for ten years at many heavy traffic corners in the New York metropolitan area. Representative installations are pictured in a booklet, "A Revolutionary Construction," which readers of THE AMERICAN CITY may secure gratis on request. Catalog V1 gives drawings showing methods of installation.

Snow-Plow for 3- to 5-Ton Trucks Has Adjustable Tapered Blade

The Good Roads Model 220 tapered-blade adjustable snow-plow for use with 3- to 5-ton trucks has all the features of the reversible blade plows and in addition the tapered moldboard, which it is claimed eliminates the necessity for flare plates. The increasing curvature of the blade, as the taper widens toward the rear, is designed to add to the plowing capacity. The blades can be fully reversed for moving snow to the opposite side without turning the truck.

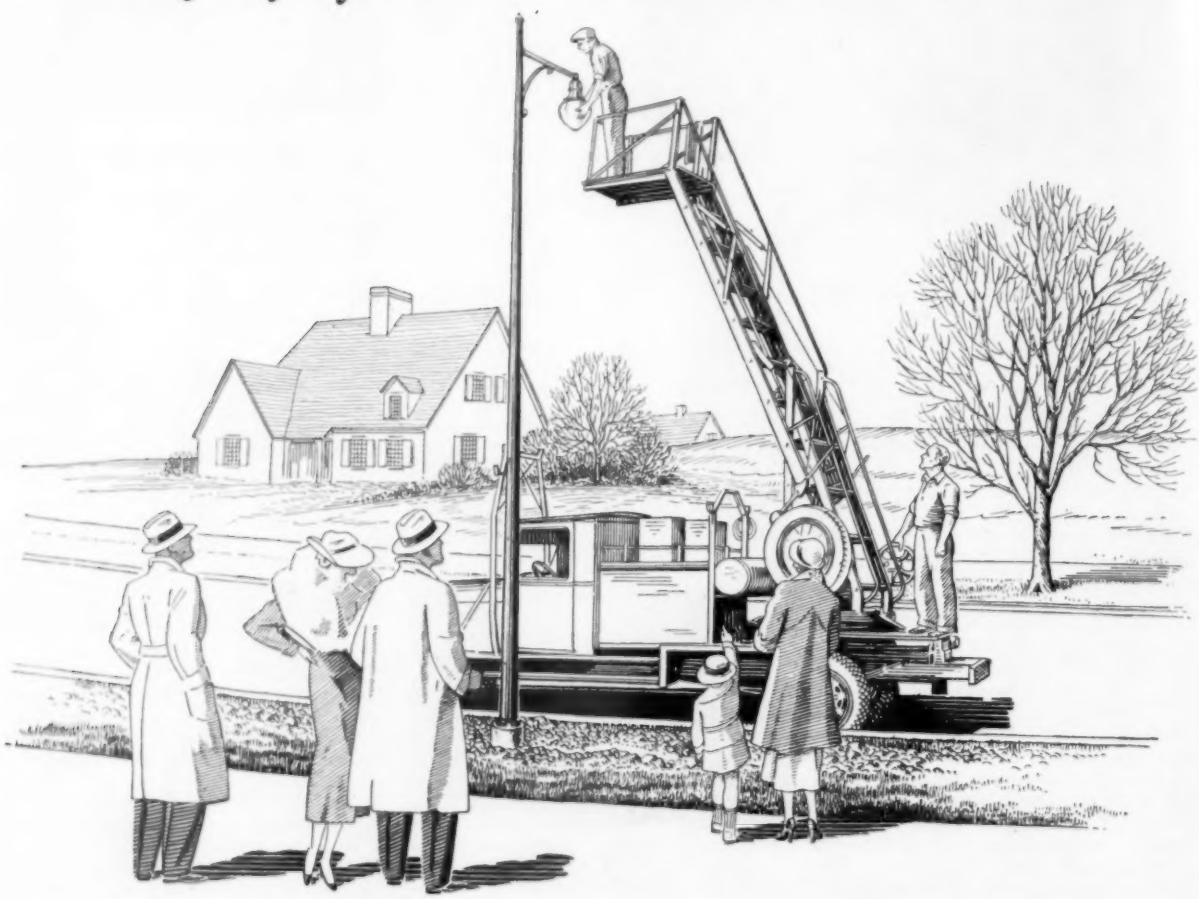
Other features of these Good Roads snow-plows, which are made by the Good Roads Machinery Corporation, Kennett Square, Pa., are the patented automatic blade trip to insure safety and protect equipment at all speeds; adjustable self-locking spring-mounted casters, with roller bearings, to carry the plow; adjustment for plowing angle, vertical pitch and clearance to suit snow conditions; and the widely spaced hinged connections and swivel arrangement to distribute the thrust evenly along the entire length of the moldboard and permit the plow to conform to the road contour.

The over-all length of the moldboard of this Model 220 is 11 feet 4 inches, the length of the cutting edge is 10 feet, the plowable widths are 8 feet 2½ inches at 35 degrees, and 7 feet 5½ inches at 42 degrees. Lift is hydraulic or mechanical, and there are two adjustments for plowing angles on either side.

Complete information on this and other models of Good Roads snow-plows is contained in a new catalog which is available to municipal officials upon request.

ADJUSTABLE TAPERED BLADE SNOW-PLOW FOR CITY USE WITH 3- TO 5-TON TRUCKS

Voters judge your administration by the good it does



Citizens Approve the Installation of Modern Lighting

They take pride in being progressive

CORRECT street lighting is conspicuous and convincing evidence of a city's progress. It needs no explanation; it asserts, to visitors and residents, that the administration is in step with the times —alive to the demands of traffic and safety—alert to uphold the good name of the city.

Its intangible values are almost priceless. It creates an atmosphere of life, energy, enterprise. It invites the establishment of new business and new homes. Above all, it stimulates civic pride and sounds the keynote for modernizing activities in a dozen directions.

General Electric street-lighting equipment is up to date in both efficiency and appearance. Let G-E engineers discuss with you how best it may contribute to the prestige of your city and to the just pride of your community. Write General Electric, Dept. 6B-201, Schenectady, N. Y.

You pay for good street lighting whether you have it or not . . . with inadequate lighting, you pay in accidents, crime, and death

500-128

GENERAL ELECTRIC

When you write for that catalog, kindly mention THE AMERICAN CITY

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Connecticut and Ohio Serve as Laboratories for Full-Scale Highway Lighting

THE states of Connecticut and Ohio have initiated highway lighting installations—the one at intersections, and the other as "safety" stretches—that are practical evidences of a huge highway-lighting program that may sweep the country. These two states are serving as laboratories for rural highway lighting and inter-city lighting.

In Connecticut, the newly constituted State Traffic Commission, comprising the Chairman of the Highway Commission, the Motor-Vehicle Commissioner, and the head of the State Police, decided just one year ago to show the state and its visitors something big in the way of highway lighting. The idea was to light as many as 1,000 intersections, and the first step was to invite the General Electric Co. and the Westinghouse Electric & Manufacturing Co. each to lay out an intersection as, in their opinion, it should be lighted.

The assigned field of the General Electric Co. is Marlboro, Conn., and the layout there consists of twelve 10,000-lumen sodium-vapor lamps in Airplane luminaires suspended at the end of straight mast-arms 25 feet above the shoulder. The first lamp in each approach adjacent to the intersection is located 40 feet from the intersection. The second lamp is 108 feet from the first and on the same side of the highway. The third lamp is 96 feet distant from the second and on the same side. Thus a stretch of 346 feet on each approach is illuminated.

Salem Four Corners, Conn., is the Westinghouse field, lighted by eight high-intensity mercury-vapor lamps of 16,000 lumens in Butterfly luminaires suspended at the end of sloping mast arms 35 feet above the roadway and 5 feet in from the curb over the pavement. In each approach, the first lamp is located 110 feet from the intersection; the second lamp 280 feet beyond the first on the same side of the highway; thus giving 530 feet illuminated.

The accompanying views of both these intersections, which were inspected by the state officials October 12, show not merely illumination, but ability to see and distinguish.

Ohio's Safety Educational Highways

Last July, the Ohio State Safety Council adopted a plan aiming to make Ohio highways safest in the country. The menace was visualized as (1) driving unsafe cars over (2) unsafe roads and (3) under poor seeing conditions, and three committees were appointed to correct these deficiencies.

The first tangible result was the opening, on the night of October 12, of the first of 48 similar strips of "safety educational highway." This demonstration, on Route 8 just north of Canton, features a four-lane straightaway of smooth brick surface, white curbs and lane markings, concise safety hints on neat signs flanking

THE CONNECTICUT INTERSECTIONS AT MARLBORO (LEFT) AND SALEM FOUR CORNERS (RIGHT), LIGHTED RESPECTIVELY BY SODIUM-VAPOR AND MERCURY-VAPOR LAMPS

Many more to be lighted

THE New L-M Spherolite

PUTS MORE LIGHT ON THE STREET, ENDS GLARE, LOWERS OPERATING COSTS

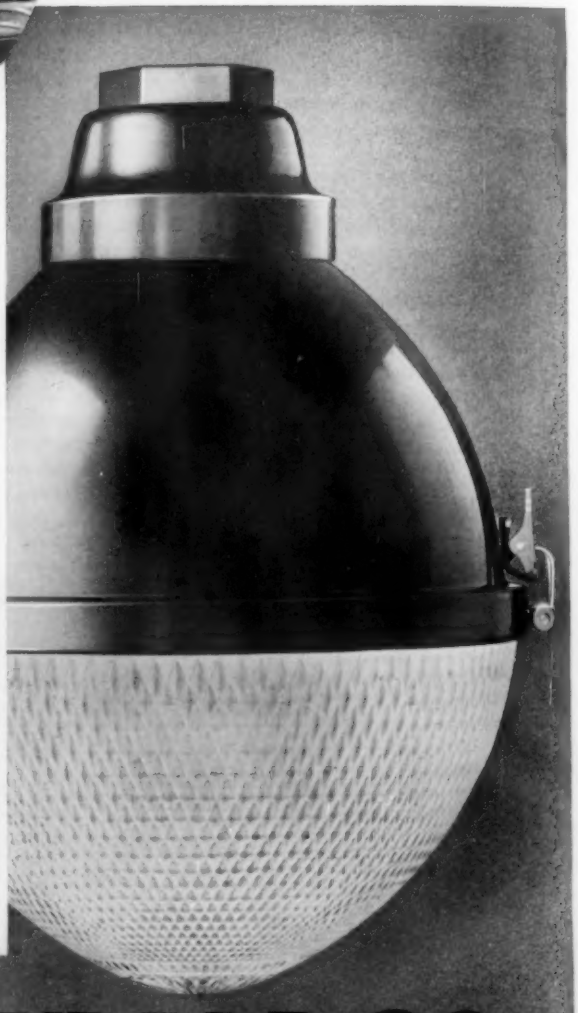
MORE LIGHT PER WATT... Because the Alzak Aluminum Reflector bends all up-cast light downward to the street.

ELIMINATION OF GLARE... Because the light source is concealed.

LOW OPERATING COST... Because Detachable Glassware permits replacement on the line... Because SPHEROLITE is light weight, dust and weather-proof ... because the glassware is self-cleaning L-M Diamond Mesh.

HIGH ADAPTABILITY ... Because SPHEROLITE is available in three combinations for either series or multiple operation.

● *Modernize your street lighting now, and economize with "SPHEROLITE." Ask your L-M representative for details, or write to Line Material Co., South Milwaukee, Wisconsin, for Bulletin LMB-2361.*



LM

LINE MATERIAL CO.

the road, modern lighting, six highway patrolmen on motorcycles. The purpose is to give motorists and pedestrians a sample of what good roads, good cars, good seeing, and good driving are like, with the expectation that the public will demand general improvement in line with the demonstration.

The strip at Canton is lighted by 25 G.E. 10,000-lumen sodium lamps mounted 25 feet high on existing poles spaced 200 feet apart along the roadway, alternately on either side. Prof. F. C. Caldwell, of Ohio State University, Columbus, heads the committee on good seeing.

It seems certain that with the type of men behind all these demonstrations and the large-scale objectives in view, the highway-lighting phase of the safety and recreational needs of the country is on the way toward being met. As this program progresses, and the beauties as well as the comforts of the illumination are appreciated, it is quite possible that municipal street lighting will be revised in some keeping with the inter-city arteries.

Forerunners of the Future

How these demonstration intersections and stretches may be joined into continuous luminous highways is shown on the cover of this issue, used by courtesy of Hamilton M. Wright, New York City. Here is the world's longest lighted highway, on Route 7 between Duanesburg and Schenectady, N. Y. This installation of 391 10,000-lumen sodium-vapor lamps spaced 250 feet apart permits motorists to see a car at ¾-mile, and a pedestrian 1½ miles ahead on the 18-mile stretch. It is hailed as a forerunner of illuminated highways from coast to coast that will increase the safety, comfort and volume of night travel.

Night Skating at Newburgh

AFTER ten years of experimenting with community ice-skating rinks, we have developed here an oval skating track, which has been in use for two seasons and has proved a popular winter recreational center for the youth of Newburgh and vicinity.

During the 1934-1935 winter season, this permanent 1/6-mile oval ice-skating rink was opened to the public, and last winter it increased its hours of usefulness by a carefully planned lighting installation, which illuminated the rink until 10 o'clock each night of skating weather.

Thanks to the illumination of the track, the long winter evenings found a merry crowd. The track became an oval path of light through the new installation designed to focus the maximum amount of light on the track without wasting it on the area outside, and to furnish well-distributed illumination without causing confusing shadows of skaters in the path of oncoming sharp steel blades. Graybar Electric Co. furnished the 18 Union Metal standards, spaced 50 feet apart and standing 24 feet high, supporting porcelain enamel reflectors of elliptical shape, set at an angle and containing a 300-watt inside frosted lamp in each unit at a height of 22 feet. This height of the light sources minimizes the formation of shadows and prevents the light rays from shining into the skaters' eyes. The system is in four circuits, controlled by switches inside the shelter house building; each light can also be operated by an individual switch at each pole. The lighting specifications were prepared by Walter Doyle, the Newburgh lighting representative of the Central Hudson Gas & Electric Corporation.

The base is Tarvia; walls 14 inches high. A Meyer snow-plow scrapes the rink nightly.

DOUGLAS C. MILLER,
Superintendent of Recreation,
Newburgh, N. Y.

SAFETY HIGHWAY EDUCATIONAL STRETCH NEAR CANTON, FIRST OF 48 PLANNED BY OHIO STATE SAFETY COUNCIL
This one is lighted by sodium-vapor lamps

300 more CHAMPION *snow plows for NEW YORK CITY!*

Once again the nation's largest city turns to the largest snow plow builder for help in its battle against winter.

GOOD ROADS MACHINERY CORP., KENNETT SQ., PA.

The safety of your city

depends on fire alarm, police and traffic signals.

You must have cables that can carry you through an emergency, a time when cable failure might add to confusion or disaster. That means not only protection from mechanical injury and careful installation to prevent malicious or accidental interference with service but permanent, high-grade, moisture-resisting insulation.

You need Simplex-LATOX lead covered Cables, made to meet your special requirements. They will be a valuable addition to your fire and police protection.

Complete information, including illustrations, comparisons, tests and specifications may be obtained by sending for booklet "Simplex-LATOX Lead Covered Cables."

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Water Rates and Service Charges, Installation Charges, Hydrant Rentals *and* Sprinkler Costs of 191 cities in the U. S. have been reprinted in pamphlet form from the 1935 issues of THE AMERICAN CITY. Each pamphlet is sold separately at $1 each or the two are sold together for $1.50.

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The American City

Waterfront Park Development in Chicago

nly filled-in lands along the south shore of the city, wing site of the Century of Progress cleared of buildings. therly Island, in the foreground, is the beginning of a chain slands to extend from Roosevelt Road south to Jackson Park